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#### MPsrch\_pp Protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:24:16 1999; MasPar time 14.68 Seconds

ular output not generated.

*Claim 82*  
*X = P*

Title: >MOHAM-312-CLAIM82A.PEP  
(1-31) from moham312:177.PEP

Perfect Score: 227

Sequence: 1 hgagtftsdlskgmeeavrfliewlknggg 31

Scoring table: PAM 150

Gap 11

Searched: 170751 seqs., 21266508 residues

Post-processing: Minimum Match 0% summaries  
Listing first 45 summaries

Database:

a-geneseq35  
1:part1 2:part2 3:part3 4:part4 5:part5 6:part6 7:part7  
8:part8 9:part9 10:part10 11:part11 12:part12 13:part13  
14:part14 15:part15 16:part16 17:part17 18:part18  
19:part19 20:part20 21:part21 22:part22 23:part23  
24:part24 25:part25 26:part26 27:part27 28:part28  
29:part29 30:part30 31:part31 32:part32 33:part33  
34:part34 35:part35 36:part36 37:part37 38:part38  
39:part39

Statistics: Mean 24.388; Variance 104.481; scale 0.233

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description	Pred. No.
1	227	100.0	31 14	R80543	Heloderma suspectum e	3.13e-12
2	227	100.0	39 39	W61770	Exendin-4, for use in Gila monst exendin-	3.13e-12
3	227	100.0	39 30	W47609	Gila monst exendin-	3.13e-12
4	227	100.0	39 14	R80546	Heloderma suspectum e	3.13e-12
5	227	100.0	87 35	W70288	Heloderma suspectum P	3.13e-12
6	220	96.9	39 39	W61776	Exendin-3, for use in Heloderma horridum ex	1.39e-11
7	220	96.9	39 14	R80545	Gila monst exendin ex	1.39e-11
8	219	96.5	30 39	W61771	Exendin-4 (1-30) for Heloderma suspectum e	1.72e-11
9	219	96.5	31 14	R80544	Heloderma suspectum e	1.72e-11
10	219	93.4	30 29	W39302	H. horridum exendin-4	7.58e-11
11	212	93.4	30 29	W39303	H. horridum exendin-4	2.18e-10
12	207	91.2	30 29	W61772	Exendin-4 (1-28) amid	3.33e-10
13	205	90.3	28 39	W61772	H. horridum exendin-3	3.33e-10
14	205	90.3	30 29	W39368	H. horridum exendin-3	3.33e-10
15	205	90.3	30 29	W39301	H. horridum exendin-3	5.08e-10
16	203	89.4	30 29	W39312	H. horridum exendin-4	

RESULT<sup>1</sup>  
ID R80543 standard; peptide: 31 AA.  
AC R80543;  
DT 27-FEB-1996 (first entry)  
DE Heloderma suspectum exendin-4 residues 1-31 (Exendin-4 (1-31)).  
KW hyperglycaemia; insulinotrophic peptide.  
OS Heloderma suspectum.  
PN R80542A8-A.  
PD 13-JUN-1995.  
PP 24-MAY-1993; 066480.  
PR 24-MAY-1993; US-066480.  
PA (ENGLISH) ENG J.  
PT Eng J.  
DR WPI; 95-263627/34.  
PR Stimulating/inhibiting insulin release with exendin polypeptide(s) for treating diabetes mellitus and preventing hyperglycaemia.  
PS Claim 1; Columns 13-14; 17P; English.  
CC R80543 is the Heloderma suspectum exendin-4 residues 1-31. It is an insulinotrophic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention of hyperglycaemia. It normalises blood glucose levels through glucose-dependent insulin mechanisms.  
SQ Sequence 31 AA;

RESULT<sup>2</sup>  
ID W61770 standard; peptide: 39 AA.  
AC W61770;  
DT 29-MAR-1999 (first entry)  
DE Exendin-4, for use in treating disorders related to food intake.  
KW obesity; type II diabetes; eating disorders; cardiac disease;

#### ALIGNMENTS

RESULT<sup>1</sup>  
ID R80543 standard; peptide: 31 AA.  
AC R80543;  
DT 27-FEB-1996 (first entry)  
DE Heloderma suspectum exendin-4 residues 1-31 (Exendin-4 (1-31)).  
KW hyperglycaemia; insulinotropic peptide.  
OS Heloderma suspectum.  
PN R80542A8-A.  
PD 13-JUN-1995.  
PP 24-MAY-1993; 066480.  
PR 24-MAY-1993; US-066480.  
PA (ENGLISH) ENG J.  
PT Eng J.  
DR WPI; 95-263627/34.  
PR Stimulating/inhibiting insulin release with exendin polypeptide(s) for treating diabetes mellitus and preventing hyperglycaemia.  
PS Claim 1; Columns 13-14; 17P; English.  
CC R80543 is the Heloderma suspectum exendin-4 residues 1-31. It is an insulinotrophic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention of hyperglycaemia. It normalises blood glucose levels through glucose-dependent insulin mechanisms.  
SQ Sequence 31 AA;

RESULT<sup>2</sup>  
ID W61770 standard; peptide: 39 AA.  
AC W61770;  
DT 29-MAR-1999 (first entry)  
DE Exendin-4, for use in treating disorders related to food intake.  
KW obesity; type II diabetes; eating disorders; cardiac disease;

KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 OS Heloderma suspectum.  
 PN WO9830231-A1.  
 PD 16-JUL-1998.  
 PF 07-JAN-1998; U00449.  
 PR 14 NOV-1997; US-056029.  
 PR 07-JAN-1997; US-034905.  
 PR 08-AUG-1997; US-055404.  
 PR 14 NOV-1997; US-055442.  
 (ARYL-) AMYLIN PHARM INC.  
 PI Beasley NRA, Bhavasar S, Prickett KS;  
 DR WPI; 98-398736/34  
 Reducing food intake by administering exendins or their  
 analogues - for treatment of e.g. obesity, type II diabetes,  
 PT eating disorders and insulin resistance  
 PT claims 17, 25; page 8; 214pp; English.  
 The invention relates to a new method for treating disorders that  
 are alleviated by reducing food intake, in particular obesity, type  
 II diabetes, eating disorders, insulin resistance syndrome, elevated  
 plasma glucose levels, or the risk of cardiac disease. The method  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model);  
 The present sequence is that of exendin-4 which is one of the preferred  
 CC compounds for use in the method.

Sequence 39 AA;

Query Match Score 227; DB 39; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 3.13e-12;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 Db 1 hgegtfsdlskqmeearvrlfiewlknggp 31  
 Qy 1 hgegtfsdlskqmeearvrlfiewlknggp 31

RESULT 3  
 ID W47609 standard; peptide; 39 AA.  
 AC W47609;  
 DT 03-JUL-1998 (first entry)  
 KW Exendin agonist; gastric motility; gastric emptying; treatment;  
 KW spasm; postprandial dumping syndrome; postprandial hyperglycaemia;  
 KW type I diabetes; impaired glucose tolerance; toxin ingestion;  
 KW obesity; Gila monster venom; exendin-4.  
 Heloderma suspectum.  
 Key Location/Qualifiers  
 Modified\_site 39  
 /note= "amidated"

PN WO9805351-A1.  
 PD 12-FEB-1998.  
 PF 08-AUG-1997; U14199.  
 PR 08-AUG-1996; US-694954.  
 (ARYL-) AMYLIN PHARM INC.  
 PI Beasley NRA, Gedulin B, Prickett KS, Young AA;  
 DR WPI; 98-1145/51/13.  
 Regulating gastrointestinal motility using exendins or their  
 agonists - for treating spasm, diabetic postprandial hyperglycaemia,  
 impaired glucose tolerance etc. also in diagnostic investigations  
 Claims 20 and 21; Fig 1; 70pp; English.  
 W47549 describes a generic exendin agonist provided that it does  
 have the formula of either exendin-3 (W47608) or exendin-4  
 (W47609).  
 Exendin agonists, which reduce gastric motility and delay gastric  
 emptying, can be used to treat spasm (where associated with acute  
 diverticulitis or disorders of the biliary tract or sphincter of  
 Oddi). Postprandial dumping syndrome and hyperglycaemia  
 (particularly associated with type 2 diabetes), type 1 diabetes,  
 impaired glucose tolerance, toxin ingestion (an exendin agonist is  
 administered to prevent stomach contents passing into the  
 intestines, then the stomach pumped) and obesity. They can also be  
 administered to subjects undergoing gastrointestinal diagnostic

CC investigation, particularly radiological or by magnetic resonance  
 CC imaging.  
 CC Exendins, components of Gila monster venom, have some sequence  
 CC similarity to Glucagon-like Peptides (GLP). They are GLP agonists  
 CC and have been suggested (US5424286) for treatment of diabetes and  
 CC prevention of hyperglycaemia.  
 Sequence 39 AA.

Query Match Score 227; DB 30; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 3.13e-12;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 Db 1 hgegtfsdlskqmeearvrlfiewlknggp 31  
 Qy 1 hgegtfsdlskqmeearvrlfiewlknggp 31

RESULT 4  
 ID R80546 standard; peptide; 39 AA.  
 AC R80546;  
 DT 27-FEB-1996 (first entry)  
 KW Heloderma suspectum exendin-4.  
 KW Exendin-4; diabetes mellitus; hyperglycaemia; insulinotropin peptide.  
 OS Heloderma suspectum.  
 PN US5424286-A.  
 PD 13-JUN-1995.  
 PF 24-MAY-1993; 066480.  
 PR 24-MAY-1993; US-066480.  
 PA (ENG/J) ENG J.  
 PI 95-262627/34  
 DR PT stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 PT for treating diabetes mellitus and preventing hyperglycaemia.  
 PS Claim 6; Columns 13-14; 17pp; English.  
 CC R80546 is Heloderma suspectum exendin-4. It is an  
 CC insulinotropic peptide and can therefore be used in the prevention of  
 CC diabetes mellitus (types I or II), and for the prevention of  
 CC hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 CC and insulin-(in)dependent mechanisms.  
 Sequence 39 AA;

Query Match Score 227; DB 14; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 3.13e-12;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 Db 1 hgegtfsdlskqmeearvrlfiewlknggp 31  
 Qy 1 hgegtfsdlskqmeearvrlfiewlknggp 31

RESULT 5  
 ID W70288 standard; Protein; 87 AA.  
 AC W70288;  
 DT 06-NOV-1998 (first entry)  
 DE Heloderma suspectum proexendin Peptide.  
 KW Heloderma suspectum proexendin; exendin N-terminal peptide; ENTP;  
 KW exendin 4 peptide; exendin 3 gene; Heloderma horridum; metabolic disease;  
 KW drug screening; endocrine tumour; organ failure; cell metabolism;  
 KW diabetes; reptilian venom peptide.  
 OS Heloderma suspectum.  
 Key Location/Qualifiers  
 FT 1-23  
 FT /note= "Signal peptide"  
 FT 1..47  
 FT /note= "ENTP"  
 FT 4...87  
 FT /note= "Exendin 4"  
 Cleavage\_site 46..47  
 FT /note= "Dipeptidyl peptidase cleavage site"  
 PN WO9835033-A1.  
 PD 13-AUG-1998.  
 PP 04-FEB-1998; CA0071.  
 PR 07-FEB-1997; GB-02582.



CC investigation, particularly radiological or by magnetic resonance  
 CC imaging.  
 CC Exendins, components of Gila monster venom, have some sequence  
 CC similarity to glucagon-like peptides (GLP). They are GLP agonists  
 CC and have been suggested (US5424286) for treatment of diabetes and  
 CC prevention of hyperglycaemia.  
 Sequence 39 AA;

Query Match 9  
 Best Local Similarity 93.5%; Pred. No. 1.39e-11; Length 39;  
 Matches 29; Conservative 2; Mismatches 0; Indels 0; Gaps 0;  
 DB 1 hsggtftsdiskqmeeavrifiewlkngg 31  
 QJ 1 hgegtftsdiskqmeeavrifiewlkngg 31

:ULTP 9  
 1) W61771; standard; peptide; 30 AA.  
 4) W61771;  
 DT 29-MAR-1999 (first entry)  
 DE Exendin-4 (1-30) for use in treating disorders related to food intake;  
 KW Exendin; obesity; type II diabetes; eating disorders; cardiac disease;  
 KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 OS Heloderma suspectum.  
 PH Key  
 PT Modified\_site 30  
 /note= "optionally the C-terminal is in amide form"  
 PN W09830231-A1.

PD 16-JUL-1998.  
 PF 07-JAN-1998; U00449.  
 PR 14-NOV-1997; US-066039.  
 PR 07-JAN-1997; US-034905.  
 PR 08-AUG-1997; US-055404.  
 PR 14-NOV-1997; US-065442.  
 PA (AMYL-) AMYLIN PHARM INC.  
 PI Beeley NRA, Bhavara S, Prickett KS;  
 DR WPI; 98-398796/34.  
 PT Reducing food intake by administering exendins or their  
 PT analogues - for treatment of e.g. obesity, type II diabetes,  
 PT eating disorders and insulin resistance.  
 PS Claims 18, 26; Page 11; 214PP; English.  
 CC The invention relates to a new method for treating disorders that  
 CC are alleviated by reducing food intake, in particular obesity, type  
 CC II diabetes, eating disorders, insulin resistance syndrome, elevated  
 CC plasma glucose levels, or the risk of cardiac disease. The method  
 CC comprises administering an exendin or an exendin agonist. The treatment  
 CC reduces appetite and lowers plasma lipid levels. It inhibits food  
 CC consumption as effectively as amylin or cholecystokinin but has a much  
 CC longer-lasting action (still effective after 6 hours in mouse model).  
 CC The present invention is that of exendin-4 (1-30) or its amide which is  
 CC one of the preferred compounds for use in the method.  
 Sequence 30 AA;

Query Match 10  
 Best Local Similarity 100.0%; Pred. No. 1.72e-11;  
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 DB 1 hgegtftsdiskqmeeavrifiewlkngg 30  
 QJ 1 hgegtftsdiskqmeeavrifiewlkngg 30

RESULT 10  
 ID P80544 standard; peptide; 31 AA.  
 AC P80544;  
 DT 27-FEB-1996 (first entry)  
 DE Heloderma suspectum exendin-4 residues 1-31-Tyr31.  
 KW Exendin-4; residues 1-31; Y-31-Exendin-4 (1-31); diabetes mellitus;  
 KW hyperglycaemia; Tyr31; insulinotropic peptide.  
 OS Heloderma suspectum.  
 PN US5424286-A.  
 PD 13-JUN-1995.

PF 24-MAY-1993; 066480.  
 PR 24-MAY-1993; US-066480.  
 PA (ENG/J) ENG J.  
 PI Eng J.  
 DR WPI; 95-262627/34.  
 PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 PT for treating diabetes mellitus and preventing hyperglycaemia.  
 PS Claim 2; Columns 13-14; 17PP; English.  
 CC R80544 is the Heloderma suspectum exendin-4 residues 1-31, where  
 CC the native Pro31 has been replaced with a Tyr residue. It is an  
 CC insulinotropic peptide, and can therefore be used in the treatment of  
 CC diabetes mellitus (types I or II), and for the prevention of  
 CC hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 CC and insulin-(in)dependent mechanisms.  
 SQ Sequence 31 AA;

Query Match 9  
 Best Local Similarity 100.0%; Pred. No. 1.72e-11;  
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 DB 1 hgegtftsdiskqmeeavrifiewlkngg 30  
 QJ 1 hgegtftsdiskqmeeavrifiewlkngg 30

RESULT 11  
 ID W39302 standard; peptide; 30 AA.  
 AC W39302;  
 DT 05-JUN-1998 (first entry)  
 DE H. horridum exendin-4 peptide.  
 KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
 KW glucagon reduction; hypoglycaemia; glucose; treatment.  
 OS Heloderma horridum.  
 PH Key  
 PT Location/Qualifiers  
 FT Modified\_site 30  
 FT /note= "This residue can be any amino acid except  
 Gly"  
 PT W09746584-A1.  
 PN W09746584-A1.  
 PD 11-DEC-1997.  
 PR 05-JUN-1997; E02930.  
 PR 13-SEP-1996; DE-037730.  
 PR 05-JUN-1996; DE-022502.  
 PR (BOEFL) BOHRINGER MANNHEIM GMBH.  
 PI Goetz B, Goetze R, Hoffmann E;  
 DR WPI; 98-042119/04.  
 PT Truncated versions of exendin peptide(s) for treating diabetes -  
 PT increased secretion and biosynthesis of insulin, but reduce those of  
 PT glucagon, and do not induce hypoglycaemia  
 PT Claim 1; Page 4; 15PP; English.  
 CC This peptide is a fragment of exendin-4 isolated from Heloderma  
 CC horridum. This peptide and its salts esters and derivatives can be  
 CC used to treat diabetes mellitus. They stimulate biosynthesis and  
 CC independent of this activity can increase peripheral glucose utilisation.  
 CC Exendin-3 and exendin-4 are only active when blood sugar levels are  
 CC high, so they will not induce hypoglycaemia. Compared with glucagon-like  
 CC peptide 1 (GLP1) and the known exendins, they are more active (effective  
 CC at lower doses), more stable to degradation and metabolism and have a  
 CC longer lasting effect. truncated forms of this peptide can be made more  
 CC economically than full length versions.  
 SQ Sequence 30 AA;

Query Match 93.4%  
 Best Local Similarity 100.0%; Pred. No. 7.58e-11;  
 Matches 29; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 DB 1 hgegtftsdiskqmeeavrifiewlkngg 29  
 QJ 1 hgegtftsdiskqmeeavrifiewlkngg 29

RESULT 12  
 ID W39309 standard; peptide; 30 AA.

AC W39309; (first entry)  
DT 05-JUN-1998  
DE H. horridum exendin-4 peptide derivative #6.  
KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
KW glucagon reduction; hypoglycaemia; glucose; treatment.  
OS Heloderma horridum.  
PH Key  
FT Modified\_site 30 /note= "C-terminal amide"  
PN W09746584-A1.  
PD 11-DEC-1997.  
PR 05-JUN-1997; E02930.  
PT Truncated versions of exendin peptide(s) for treating diabetes -  
PT increase secretion and biosynthesis of insulin, but reduce those of  
PT glucagon, and do not induce hypoglycaemia.  
DS Claim 2: Page 22; 150PP; English.  
Peptides W39303-W39420 are fragments of exendin-3 and exendin-4  
isolated from Heloderma horridum which are used in a novel method  
for the treatment of diabetes mellitus. These peptides can stimulate  
biosynthesis and secretion of insulin, but have the opposite effect on  
glucagon, and independent of this activity can increase peripheral  
glucose utilisation. Exendin-3 and exendin-4 are only active when blood  
sugar levels are high, so they will not induce hypoglycaemia. Compared  
with glucagon-like peptide 1 (GLP1) and the known exendins, they are more  
active (effective at lower doses), more stable to degradation and  
metabolism and have a longer lasting effect. Truncated forms of this  
peptide can be made more economically than full length versions.  
SQ Sequence 30 AA;

Query Match 91.2%; Score 207; DB 29; Length 30;  
Best Local Similarity 96.6%; Pred. No. 2.18e-10;  
Matches 28; Conservative 0; Mismatches 1; Indels 0; Gaps 0;  
QY 1 hgegtfsdlskqmqeeeavrlfiewlkag 29  
1 hgegtfsdlskqmqeeeavrlfiewlkng 29

RESULT 13  
IN W61772 standard; peptide; 28 AA.  
AC W61772.  
DT 29-MAR-1999 (first entry)  
DE Exendin-4 (1-28) amide for use in treating disorders related to food.  
KW Exendin; obesity; type II diabetes; eating disorders; cardiac disease;  
KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
KW Heloderma suspectum.  
PH Key  
FT Modified\_site 28 /note= "the C-terminal is in amide form"  
PN W09830231-A1.  
PD 16-JUN-1998.  
PR 07-JAN-1998; 000449.  
PR 14-NOV-1997; US-166029.  
PR 07-JAN-1997; US-034905.  
PR 08-AUG-1997; US-055404.  
PR 14-NOV-1997; US-165442.  
PA (AMYL-) AMYLIN PHARM INC.  
PD Beeley, NRA, Bhavas, S, Prickett, KS;  
NP WI; 98-398/96/34.  
PT Reducing food intake by administering exendins or their  
PT analogues - for treatment of e.g. obesity, type II diabetes,  
PT eating disorders and insulin resistance.  
PS Claims 18, 26; Page 12; 214PP; English.  
CC The invention relates to a new method for treating disorders that  
CC are alleviated by reducing food intake, in particular obesity, type  
II diabetes, eating disorders, insulin resistance syndrome, elevated  
CC plasma glucose levels, or the risk of cardiac disease. The method  
CC comprises administering an exendin or an exendin agonist. The treatment

CC reduces appetite and lowers plasma lipid levels. It inhibits food  
CC consumption as effectively as amylin or cholecystokinin but has a much  
CC longer-lasting action (still effective after 6 hours in a mouse model).  
CC The present sequence is that of exendin-4 (1-28) amide which is one of  
CC the preferred compounds for use in the method.  
SQ sequence 28 AA;

Query Match 90.3%; Score 205; DB 39; Length 28;  
Best Local Similarity 100.0%; Pred. No. 3.33e-10;  
Matches 28; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 1 hgegtfsdlskqmqeeeavrlfiewlk 28  
1 :|||||:|||||:|||||:|||||:|||||:|||||:  
QY 1 hgegtfsdlskqmqeeeavrlfiewlkng 28

RESULT 14  
ID W39368 standard; peptide; 30 AA.  
AC W39368.  
DT 05-JUN-1998 (first entry)  
DE H. horridum exendin-3 peptide derivative #11.  
KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
KW glucagon reduction; hypoglycaemia; glucose; treatment.  
OS Heloderma horridum.  
PH Key  
FT Modified\_site 30 /note= "C-terminal amide"  
PN W09746584-A1.  
PD 11-DEC-1997.  
PR 05-JUN-1998; E02930.  
PR 13-SEP-1996; DE-037230.  
PR 05-JUN-1996; DE-022502.  
PA (BOEFL) BOHRINGER MANNHEIM GMBH.  
PI Goede, B, Goede, R, Hoffmann, E;  
DR WPI; 98-042119/04.  
FT Truncated versions of exendin peptide(s) for treating diabetes -  
FT increase secretion and biosynthesis of insulin, but reduce those of  
FT glucagon, and do not induce hypoglycaemia.  
FS Claim 2; Page 27; 150PP; English.  
CC Peptides W39303-W39420 are fragments of exendin-3 and exendin-4  
CC isolated from Heloderma horridum which are used in a novel method  
CC for the treatment of diabetes mellitus. These Peptides can stimulate  
CC biosynthesis and secretion of insulin, but have the opposite effect on  
CC glucagon, and independent of this activity can increase peripheral  
CC glucose utilization. Exendin-3 and exendin-4 are only active when blood  
CC sugar levels are high, so they will not induce hypoglycaemia. Compared  
CC with glucagon-like Peptide 1 (GLP1) and the known exendins, they are more  
CC active (effective at lower doses), more stable to degradation and  
CC metabolism and have a longer lasting effect. Truncated forms of this  
CC peptide can be made more economically than full length versions.  
SQ Sequence 30 AA;

Query Match 90.3%; Score 205; DB 29; Length 30;  
Best Local Similarity 93.1%; Pred. No. 3.33e-10;  
Matches 27; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

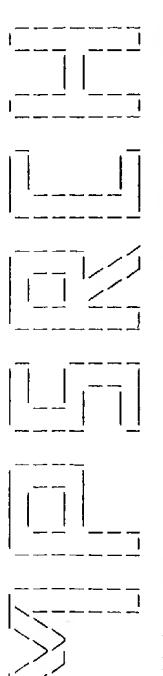
Db 1 hsdgftsdlskqmqeeeavrlfiewlkng 29  
1 :|||||:|||||:|||||:|||||:|||||:  
QY 1 hgegtfsdlskqmqeeeavrlfiewlkng 29

RESULT 15  
ID W39301 standard; peptide; 30 AA.  
AC W39301.  
DT 05-JUN-1998 (first entry)  
DE H. horridum exendin-3 peptide.  
KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
KW glucagon reduction; hypoglycaemia; glucose; treatment.  
OS Heloderma horridum.  
PH Key  
FT Modified\_site 30 /note= "This residue can be any amino acid except  
Gly"

WO9746584-A1.  
 PN 11-DEC-1997.  
 PD 05-JUN-1997; E02930.  
 PF 13-SEP-1996; DE-037230.  
 PR 05-JUN-1996; DE-022502.  
 PA (BOEFL) BOHRINGER MANNHEIM GMBH.  
 PI Goede, B., Goede, R., Hoffmann, E.;  
 WPI; 98-042119/04.  
 DR PT  
 PT Truncated versions of exendin peptide(s) for treating diabetes -  
 PT increase secretion and biosynthesis of insulin, but reduce those of  
 PT glucagon, and do not induce hypoglycaemia  
 PS Claim 1; Page 3; 150pp; English.  
 CC This Peptide is a fragment of exendin-3 isolated from Heloderma  
 CC horridum. This Peptide and its salts, esters and derivatives can be  
 CC used to treat diabetes mellitus. They stimulate biosynthesis and  
 CC secretion of insulin, but have the opposite effect on glucagon, and  
 CC independent of this activity can increase peripheral glucose utilisation.  
 CC Exendin-3 and exendin-4 are only active when blood sugar levels are  
 CC high, so they will not induce hypoglycaemia. Compared with glucagon-like  
 CC peptide 1 (GIP1) and the known exendins, they are more active (effective  
 CC at lower doses), more stable to degradation and metabolism and have a  
 CC longer lasting effect. Truncated forms of this peptide can be made more  
 CC economically than full length versions.  
 Sequence 30 AA;

Query Match 90.3%; Score 205; DB 29; Length 30;  
 Best Local Similarity 93.1%; Pred. No. 3 33e-10;  
 Matches 27; Conservative 2; Mismatches 0; Indels 0; Gaps 0;  
 Db 1 hsdgfttsdlskqmqeeavrfliewlkng 29  
 ::|||||::|||:|||||:|||||:|||||:  
 Qy 1 hgegtftsdsikqmqeeavrfliewlkng 29

Search completed: Mon Oct 4 15:24:34 1999  
 Job time : 18 secs.

\*\*\*\*\*  
  
 \*\*\*\*\*

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Mpsrch\_pp protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:23:50 1999; MasPar time 6.03 Seconds  
 206.071 Million cell updates/sec

ular output not generated.

-file:  
 Description:  
 Perfect Score:  
 Sequence: 1 hgegtfsdlskqmeearvlfiwlkngpp 31

Scoring table: PAM 150  
 Gap 11

Searched: 122810 seqs, 40065893 residues

Post-processing: Minimum Match 0%  
 Listing first 45 summaries

Database: Pir60  
 1:pir1 2:pir2 3:pir3 4:pir4

Statistics: Mean 34.029; Variance 63.644; scale 0.535

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query	Match	Length	DB ID	Description	Pred. No.
1	227	100.0	39	1	HNH4G	exendin-4 - Gila mons	3.06e-2
2	220	96.9	39	1	HWCH3Z	exendin-3 - Mexican b	7.58e-26
3	127	55.9	31	2	SA4472	glucagon G2 - North A	2.68e-08
4	127	55.9	101	1	GCEGB	glucagon Precursor -	2.68e-08
5	125	55.1	63	1	GCIDC	glucagon Precursor -	5.97e-08
6	122	53.7	30	2	SA4473	glucagon-like peptide 1	1.97e-07
7	122	53.7	31	2	S4471	glucagon G1 - North A	1.97e-07
8	121	53.3	30	2	B61125	glucagon-like Peptide 2	2.93e-07
9	121	53.3	30	2	C61125	glucagon-like peptide	2.93e-07
10	120	52.9	66	2	15193	glucagon - chainok sa	4.35e-07
11	120	52.9	178	2	151057	glucagon II precursor	4.35e-07
12	120	52.9	178	2	151058	glucagon I precursor	4.35e-07
13	119	52.4	72	1	GCGAA	glucagon 2 precursor	6.45e-07
14	118	52.0	122	1	GCF2	glucagon 2 precursor	9.55e-07
15	117	51.5	60	1	GCONC	glucagon precursor -	1.41e-06
16	115	50.7	29	1	GCFD	glucagon - smaller sp	3.08e-06
17	115	50.7	158	1	GCPG	glucagon Precursor -	3.08e-06
18	115	50.7	180	2	A57294	glucagon Precursor -	3.08e-06
19	115	50.7	180	1	GCH1	glucagon Precursor -	3.08e-06
20	115	50.7	180	1	GRDUD	glucagon Precursor -	3.08e-06
21	115	50.7	180	1	GCBO	glucagon Precursor -	3.08e-06
22	115	50.7	180	1	GCGP	glucagon Precursor -	3.08e-06
23	115	50.7	180	1	GCHU	glucagon Precursor -	3.08e-06

\*\*\*\*\*

ALIGMENTS

RESULT	1	HNGH4G #type complete
ENTRY		exendin-4 - Gila monster
TITLE		#formal_name Heloderma suspectum #common_name Gila monster
ORGANISM		31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change
DATE		21-Nov-1997
ACCESSIONS		A42486
REFERENCE		Eng, J.; Kleinman, W.A.; Singh, L.; Rauffman, J.P. J. Biol. Chem. (1992) 267:7402-7405
#authors		Isolation and characterization of exendin-4, an exendin-3 analogue, from Heloderma suspectum venom. Further evidence for an exendin receptor on dispersed acini from guinea pig pancreas.
#cross-references		#MUID:92218391
#accession		A42486
#molecule_type		protein
#residues		1-39 #label ENG
COMMENT		Exendin-4 does not stimulate amylase secretion by pancreatic acinar cells.
CLASSIFICATION		#superfamily glucagon
KEYWORDS		#modified_site amidated carboxyl end; duplication; venom
FEATURE		39 #molecular-weight 4188 #checksum 9570
SUMMARY		#length 39 #experimental
		Query Match Score 100.0%; Best Local Similarity 100.0%; Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
		Query Match Score 227; DB 1; Length 39; Pred. No. 3.06e-27; Best Local Similarity 100.0%; Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Db		1 HGGEGFETSDLSKQMEEAERVFLIEWLKNGP 31
Qy		1 hgegtfsdlksqmeearvlfiwlkngpp 31
RESULT		2
ENTRY		HWGH3Z #type complete
TITLE		exendin-3 - Mexican beaded lizard
ORGANISM		#formal_name Heloderma horridum #common_name Mexican beaded lizard
DATE		31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change
ACCESSIONS		21-Nov-1997
REFERENCE		A23674
#authors		Eng, J.; Andrews, P.C.; Kleinman, W.A.; Singh, L.; Rauffman, J.P.



```

#journal Gen. Comp. Endocrinol. (1991) 82:23-32
#title The primary structure of glucagon-like peptide but not
insulin has been conserved between the American eel,
Anguilla rostrata and the European eel, Anguilla anguilla.
#cross-references MUID:91340068
#accession B61125
#molecule_type protein
##residues 1-30 #label CON
CLASSIFICATION #superfamily Glucagon
KEYWORDS amidated carboxyl end; duplication
FEATURE 1-30 #product glucagon-like peptide #status experimental
#label GLP\#
#modified_site amidated carboxyl end (Arg) #status
predicted
#length 30 #molecular-weight 3376 #checksum 6092

Query Match 53.3% Score 121; DB 2; Length 30;
Best Local Similarity 48.3% Pred. No. 2.93e-07; Gaps 0;
Matches 14; Conservative 9; Mismatches 6; Indels 0; Gaps 0;

Db 1 HAE GTT YSDVSSYLQDQAAKEFYSWLKTG 29
Qy 1 hgegtfsdlskqmeecavrifewlkng 29

RESULT 9 C61125 #type complete
ENTRY C61125 #label CON
TITLE glucagon-like peptide - European eel
ORGANISM #formal_name Anguilla anguilla #common_name European eel
DATE 10-Mar-1994 #sequence_revision 10-Mar-1994 #text_change
21-Nov-1997

ACCESSIONS C61125
REFERENCE A61125
#authors Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.
#Journal Gen. Comp. Endocrinol. (1991) 82:23-32
#cross-references MUID:91340068
#accession C61125
#molecule_type protein
##residues 1-30 #label CON
CLASSIFICATION #superfamily Glucagon
KEYWORDS amidated carboxyl end; duplication
FEATURE 1-30 #product glucagon-like peptide #status experimental
#label GLP\#
#modified_site amidated carboxyl end (Arg) #status
predicted
#length 30 #molecular-weight 3376 #checksum 6092

Query Match 53.3% Score 121; DB 2; Length 30;
Best Local Similarity 48.3% Pred. No. 2.93e-07; Gaps 0;
Matches 14; Conservative 9; Mismatches 6; Indels 0; Gaps 0;

Db 1 HAE GTT YSDVSSYLQDQAAKEFYSWLKTG 29
Qy 1 hgegtfsdlskqmeecavrifewlkng 29

RESULT 10 I51093 #type fragment
ENTRY I51093 #label fragment
TITLE glucagon - Chinook salmon (fragment)
ORGANISM #formal_name Oncorhynchus tschawytscha #common_name chinook
DATE 13-Sep-1996 #sequence_revision 13-Sep-1996 #text_change
21-Nov-1997

ACCESSIONS I51093
REFERENCE A55895
#authors Irwin, D.M.; Wong, J.O.
#Journal Mol. Endocrinol. (1995) 9:267-277
#cross-references MUID:91340068
#accession B61125
#molecule_type protein
##residues 1-30 #label CON
CLASSIFICATION #superfamily Glucagon
KEYWORDS amidated carboxyl end; duplication
FEATURE 1-30 #product glucagon-like peptide #status experimental
#label GLP\#
#modified_site amidated carboxyl end (Arg) #status
predicted
#length 30 #molecular-weight 3376 #checksum 6092

Query Match 53.3% Score 121; DB 2; Length 30;
Best Local Similarity 48.3% Pred. No. 2.93e-07; Gaps 0;
Matches 14; Conservative 9; Mismatches 6; Indels 0; Gaps 0;

Db 1 HAE GTT YSDVSSYLQDQAAKEFYSWLKTG 29
Qy 1 hgegtfsdlskqmeecavrifewlkng 29

```



```

1-36 #product glucagon-36 (oxyntomodulin) #status
1-20 experimental #label G36\#
39-70 #product glucagon #status predicted #label GCN\
#product glucagon-like peptide 1 #status predicted
#length 72 #checksum 8055

SUMMARY
Query Match 52.4%; Score 119; DB 1; Length 72;
Best Local Similarity 44.8%; Pred. No. 6.4Pe-07;
Matches 13; Conservative 10; Mismatches 6; Indels 0; Gaps 0;
Db 39 HADGTYTSDVSSYLODQAAKFKTYWIKG 67
1:::1|||:1:::1:::1:::1|||1
1 hgegtftsdlskqmeeaavrliewlkng 29

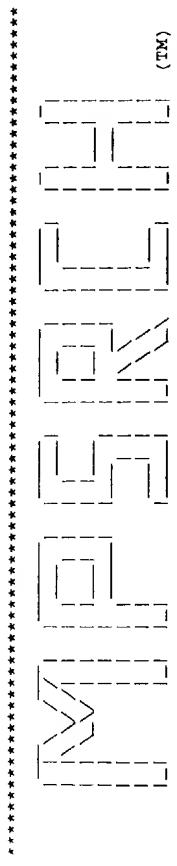
RESULT 14 GCAE2 #type complete
LITTLE glucagon 2 precursor - American goosefish
CONTAINS glucagon; glucagon-like peptide 1
ORGANISM #formal_name Lophius americanus #common_name American
goosefish
31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change
20-Mar-1998

ACCESSIONS A05150
REFERENCE A05150
#authors Lund, P.K.; Goodman, R.H.; Montminy, M.R.; Dee, P.C. ;
Halpern, J.F.
#journal J. Biol. Chem. (1983) 258:3280-3284
#title Anglerfish islet Pre-Proglucagon II. Nucleotide and
corresponding amino acid sequence of the cDNA.
#cross-references PMID:83135785
#accession A05150
#molecule_type mRNA
##residues 1-122 #label IUN
##cross-references GB-J00933; NID:9213352; PID:9213353
CLASSIFICATION #superfamily glucagon
#KEYWORDS #superfamily glucagon
#carbohydrate metabolism; duplication; hormone; pancreas
FEATURE 1-21 #domain signal sequence #status Predicted #label SIG\
22-122 #product proglucagon 2 #status Predicted #label PGC2\
52-80 #product glucagon #status Predicted #label GCN\
89-119 #product glucagon-like peptide 1 #status predicted
#label GL1
#length 122 #molecular-weight 14171 #checksum 7194

SUMMARY
Query Match 52.0%; Score 118; DB 1; Length 122;
Best Local Similarity 44.8%; Pred. No. 9.5Pe-07;
Matches 13; Conservative 10; Mismatches 6; Indels 0; Gaps 0;
Db 89 HADGTYTSDVSSYLODQAAKDFVSWIKG 117
1:::1|||:1:::1:::1|||1
1 hgegtftsdlskqmeeaavrliewlkng 29

RESULT 15 GCONC #type fragments
LITTLE glucagon precursor - coho salmon (fragments)
CONTAINS #formal_name Oncorhynchus kisutch #common_name coho salmon
ORGANISM 30-Sep-1998 #sequence_revision 30-Sep-1998 #text_change
20-Mar-1998
ACCESSIONS A94232
REFERENCE JP0103; JP104
Pliesetskaya, E.; Pollock, H.G.; Rouse, J.B.; Hamilton, J.W. ;
Kimmel, J.R.; Gorham, A.
#journal Regul. Pep. (1986) 14:57-67
#title Isolation and structure of coho salmon (Oncorhynchus kisutch)
#cross-references NID:66234338
#accession JP0103
#molecule_type protein
#cross-references 1-20-50 "#label D7


```



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MPstrch\_pp protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:22:56 1999; MasPar time 4.19 Seconds

209.327 Million cell updates/sec

Molecular output not generated.

--file: >MOHAM-312-CLAIM82A.PEP  
(1-31) from moham312177.pep

Perfect Score:

Sequence: 1 hgegttsdskqmeearvifew.lnkqgp 31

Scoring table: PAM 150

Gap 11

Searched: 79977 seqs, 28268293 residues

Post-processing: Minimum Match 0%

Listing first 45 summaries  
Database: swissprot37

Statistics: Mean 34.930; Variance 58.252; scale 0.600

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Score	Query	Match	Length	DB ID	Description	Pred. No.
1	227	100.0	87	1	EXE4_HELSU	EXENDIN-4 PRECURSOR.	1.24e-30
2	220	96.9	39	1	EXE3_HELHO	EXENDIN-3.	4.43e-29
3	127	55.9	103	1	GLUC_RANCA	GLUCAGON PRECURSOR (FR	1.44e-09
4	126	55.5	71	1	GLUC_ICTPU	GLUCAGON PRECURSOR (FR	2.28e-09
5	121	53.3	30	1	GLUC_ANGAN	GLUCAGON-LIKE PEPTIDE	2.07e-08
6	119	52.4	78	1	GLUC_LEPSP	GLUCAGON PRECURSOR (FR	4.95e-08
7	119	52.4	121	1	GLUC_CARAU	GLUCAGON PRECURSOR.	4.95e-08
8	118	52.0	122	1	GLUC_LOPAM	GLUCAGON II PRECURSOR.	7.64e-08
9	117	51.5	68	1	GLUC_ONCKI	GLUCAGON PRECURSOR (FR	1.18e-07
10	115	50.7	29	1	GLUC_SCYCA	GLUCAGON.	2.79e-07
11	115	50.7	158	1	GLUC_PIG	GLUCAGON PRECURSOR (FR	2.79e-07
12	115	50.7	180	1	GLUC_MOUSE	GLUCAGON PRECURSOR.	2.79e-07
13	115	50.7	180	1	GLUC_HUMAN	GLUCAGON PRECURSOR.	2.79e-07
14	115	50.7	180	1	GLUC_CAVPO	GLUCAGON PRECURSOR.	2.79e-07
15	115	50.7	180	1	GLUC_OCTIDE	GLUCAGON PRECURSOR.	2.79e-07
16	115	50.7	180	1	GLUC_MESAU	GLUCAGON PRECURSOR.	2.79e-07
17	115	50.7	180	1	GLUC_RAT	GLUCAGON PRECURSOR.	2.79e-07
18	115	50.7	180	1	GLUC_BOVIN	GLUCAGON PRECURSOR.	2.79e-07
19	114	50.2	151	1	GLUC_CHICK	GLUCAGON PRECURSOR.	4.28e-07
20	113	49.8	124	1	GLUC_LOPAM	GLUCAGON I PRECURSOR.	6.56e-07
21	110	48.5	29	1	GLUC_CHIBR	GLUCAGON.	2.34e-06
22	108	47.6	29	1	GLUC_TORMA	GLUCAGON.	5.44e-06
23	105	46.3	33	1	GLUC_ORENT	GLUCAGON II.	1.90e-05

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13	115	50.7	180	1	GLUC_HUMAN	GLUCAGON PRECURSOR.	2.79e-07
14	115	50.7	180	1	GLUC_CAVPO	GLUCAGON PRECURSOR.	2.79e-07
15	115	50.7	180	1	GLUC_OCTIDE	GLUCAGON PRECURSOR.	2.79e-07
16	115	50.7	180	1	GLUC_MESAU	GLUCAGON PRECURSOR.	2.79e-07
17	115	50.7	180	1	GLUC_RAT	GLUCAGON PRECURSOR.	2.79e-07
18	115	50.7	180	1	GLUC_BOVIN	GLUCAGON PRECURSOR.	2.79e-07
19	114	50.2	151	1	GLUC_CHICK	GLUCAGON PRECURSOR.	4.28e-07
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13	115	50.7	180	1	GLUC_HUMAN	GLUCAGON PRECURSOR.	2.79e-07
14	115	50.7	180	1	GLUC_CAVPO	GLUCAGON PRECURSOR.	2.79e-07
15	115	50.7	180	1	GLUC_OCTIDE	GLUCAGON PRECURSOR.	2.79e-07
16	115	50.7	180	1	GLUC_MESAU	GLUCAGON PRECURSOR.	2.79e-07
17	115	50.7	180	1	GLUC_RAT	GLUCAGON PRECURSOR.	2.79e-07
18	115	50.7	180	1	GLUC_BOVIN	GLUCAGON PRECURSOR.	2.79e-07
19	114	50.2	151	1	GLUC_CHICK	GLUCAGON PRECURSOR.	4.28e-07
20	113	49.8	124	1	GLUC_LOPAM	GLUCAGON I PRECURSOR.	6.56e-07
21	110	48.5	29	1	GLUC_CHIBR	GLUCAGON.	2.34e-06
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20	113	49.8	124	1	GLUC_LOPAM	GLUCAGON I PRECURSOR.	6.56e-07
21	110	48.5	29	1	GLUC_CHIBR	GLUCAGON.	2.34e-06
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8	118	52.0	122	1	GLUC_LOPAM	GLUCAGON II PRECURSOR.	7.64e-08
9	117	51.5	68	1	GLUC_ONCKI	GLUCAGON PRECURSOR (FR	1.18e-07
10	115	50.7	29	1	GLUC_SCYCA	GLUCAGON.	2.79e-07
11	115	50.7	158	1	GLUC_PIG	GLUCAGON PRECURSOR (FR	2.79e-07
12	115	50.7	180	1	GLUC_MOUSE	GLUCAGON PRECURSOR.	2.79e-07
13	115	50.7	180	1	GLUC_HUMAN	GLUCAGON PRECURSOR.	2.79e-07
14	115	50.7	180	1	GLUC_CAVPO	GLUCAGON PRECURSOR.	2.79e-07
15	115	50.7	180	1	GLUC_OCTIDE	GLUCAGON PRECURSOR.	2.79e-07
16	115	50.7	180	1	GLUC_MESAU	GLUCAGON PRECURSOR.	2.79e-07
17	115	50.7	180	1	GLUC_RAT	GLUCAGON PRECURSOR.	2.79e-07
18	115	50.7	180	1	GLUC_BOVIN	GLUCAGON PRECURSOR.	2.79e-07
19	114	50.2	151	1	GLUC_CHICK	GLUCAGON PRECURSOR.	4.28e-07
20	113	49.8	124	1	GLUC_LOPAM	GLUCAGON I PRECURSOR.	6.56e-07
21	110	48.5	29	1	GLUC_CHIBR	GLUCAGON.	2.34e-06
22	108	47.6	29	1	GLUC_TORMA	GLUCAGON.	5.44e-06
23	105	46.3	33	1	GLUC_ORENT	GLUCAGON II.	1.90e-05

Result No.	Score	Query	Match	Length	DB ID	Description	Pred. No.
1	227	100.0	87	1	EXE4_HELSU	EXENDIN-4 PRECURSOR.	1.24e-30
2	220	96.9	39	1	EXE3_HELHO	EXENDIN-3.	4.43e-29
3	127	55.9	103	1	GLUC_RANCA	GLUCAGON PRECURSOR (FR	1.44e-09
4	126	55.5	71	1	GLUC_ICTPU	GLUCAGON PRECURSOR (FR	2.28e-09
5	121	53.3	30	1	GLUC_ANGAN	GLUCAGON-LIKE PEPTIDE	2.07e-08
6	119	52.4	78	1	GLUC_LEPSP	GLUCAGON PRECURSOR (FR	4.95e-08
7	119	52.4	121	1	GLUC_CARAU	GLUCAGON PRECURSOR.	4.95e-08
8	118	52.0	122	1	GLUC_LOPAM	GLUCAGON II PRECURSOR.	7.64e-08
9	117	51.5	68	1	GLUC_ONCKI	GLUCAGON PRECURSOR (FR	1.18e-07
10	115	50.7	29	1	GLUC_SCYCA	GLUCAGON.	2.79e-07
11	115	50.7	158	1	GLUC_PIG	GLUCAGON PRECURSOR (FR	2.79e-07
12	115	50.7	180	1	GLUC_MOUSE	GLUCAGON PRECURSOR.	2.79e-07
13	115	50.7	180	1	GLUC_HUMAN	GLUCAGON PRECURSOR.	2.79e-07
14	115	5					

Matches	31;	Conservative	0;	Mismatches	0;	Indels	0;	Gaps	0;		
Db	48	HGEGLFTSDLSKQMEEEAVRLFIVWLKGQP	78							PFAM; PF00123; hormone2;	3.
QY	1	hgeglftsdlskqmeeeavrfliewlkngqp	31							DR HSSP; P01274; 1GCN.	
<b>RESULT 2</b>											
ID	EXE3_HELHO	STANDARD;		PRT;	39 AA.					DR KW GLUCAGON FAMILY; HORMONE.	
AC	P20394;									FT PEPTIDE 1 29 GLUCAGON.	
DT	01-FEB-1991 (REL. 17, CREATED)									FT PEPTIDE 1 36 GLUCAGON-LIKE PEPTIDE 1.	
DT	01-FEB-1991 (REL. 17, LAST SEQUENCE UPDATE)									FT PEPTIDE 39 70 GLUCAGON-LIKE PEPTIDE 1.	
DT	01-MAY-1992 (REL. 22, LAST ANNOTATION UPDATE)									FT NON_CONS 70 71 GLUCAGON-LIKE PEPTIDE 1.	
DE	EXENDIN-3									FT PEPTIDE 71 103 GLUCAGON-LIKE PEPTIDE 2.	
OS	HELODERMA HORRIDUM (MEXICAN BEADED LIZARD).									SQ SEQUENCE 103 AA; 11/19 MW; D43EDFC9 CRC32;	
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; LEPIDOSAURIA; SQUAMATA; SCLEROGLOSSA; ANGUIMORPHA; HELODERMATIDE; HELODERMA.										
[1]											
<b>SEQUENCE</b>											
RC	TISSUE=VENOM;										
RX	MEDLINE; 91056067.										
RA	ENG J., ANDREW P.C., KLEINMAN W.A., SINGH L., RAUFMAN J.-P.;										
RT	"Purification and structure of exendin-3, a new Pancreatic secretagogue isolated from Heloderma horridum venom.";									AC P0493; 03 CREATED)	
RL	J. BIOL. CHEM. 265:20259-20262(1990).									DT 01-MAR-1989 (REL. 10, LAST SEQUENCE UPDATE)	
CC	-!- FUNCTION: HAS A VIP/SECRETIN-LIKE BIOLOGICAL ACTIVITY. INTERACTS WITH THE EXENDIN RECEPTOR.									DT 01-NOV-1990 (REL. 16, LAST ANNOTATION UPDATE)	
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.									DE GLUCAGON PRECURSOR (FRAGMENT).	
CC	-!- PROSITE: PS00260; GLUCAGON; 1.									OS ICALURUS PUNCTATUS (CHANNEL CATFISH).	
DR	PIR; A23674; HWGH32.									OS EUARRYTA; METAZOA; CHORDATA; VERTEBRA; ACTINOPTERYGII; NEOPTERYGII; TELEOSTEI; EUTELEOSTEI; OSTARIOPHYI; SILURIFORMES; ICTALURIDAE;	
DR	HSSP; P0123; hormone2; 1.									OC ICALURUS.	
DR	PPAF; P00123; 1GCN.									RN [1]	
DR	MOD_RES 39 AMIDATION.									RP SEQUENCE.	
FT	SEQUENCE 39 AA; 4204 MW; AB598FD3 CRC32;									RC TISSUE=PANCREAS;	
FT	SEQUENCE 39 AA; 4204 MW; AB598FD3 CRC32;									RX MEDLINE; 87156787.	
Query Match	Score 96.9%; Best Local Similarity 93.5%; Matches 29;				Score 220; DB 1; Length 39; Pred. No. 4.43e-29; Indels 0; Gaps 0;					RA ROOSEIN N.M., MARKENHOLZ A.M., ANDREWS P.C., GURD R.S.; RT "Biological activities of catfish glucagon and glucagon-like peptide."	
Db	1 HSDOTFTSDLSKQMEEEAVRLFIVWLKGQP	31			1 hgeglftsdlskqmeeeavrfliewlkngqp	31				RL BIOL. BIOPHYS. RES. COMMUN. 143:87-92(1987).	
QY	1 hgeglftsdlskqmeeeavrfliewlkngqp	31								RN [2]	
<b>SEQUENCE</b>											
RC	GLUCAGON FAMILY; VENOM; AMIDATION.									RA ANDREWS P.C., RONNER P.; RT "Isolation and structures of glucagon and glucagon-like Peptide from catfish pancreas"; RT J. BIOL. CHEM. 260:3910-3914(1985).	
RC	NON_TER 1									CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	
FT	PEPTIDE 1 29 GLUCAGON.									CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.	
FT	PEPTIDE 38 71 GLUCAGON-LIKE PEPTIDE.									CC -!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN GOOSEFISH SEQUENCES.	
FT	CONFFLICT 53 53 E -> D (IN REF. 2).									CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	
FT	NON_TER 71 71 C49ED93A CRC32;									DR PIR; A05166; GCICD.	
FT	SEQUENCE 71 AA; 8173 MW; C49ED93A CRC32;									DR PROSITE; PS00260; GLUCAGON; 2.	
FT	PEPTIDE 1 1 HSSP; P01224; 1GCN.									DR PPAM; P00123; hormone2; 2.	
FT	KW GLUCAGON FAMILY; HORMONE.									DR RC TISSUE=PANCREAS;	
FT	NON_TER 1 1 HSSP; P01274; 1GCN.									RC TISSUE=PANCREAS;	
RA	POLLOCK H.G., HAMILTON J.W., ROUSE J.B., EBNER K.E., RAWITCH A.B.; RT "Isolation of peptide hormones from the pancreas of the bullfrog (Rana catesbeiana). Amino acid sequences of pancreatic polypeptide, oxyntomodulin, and two glucagon-like peptides.";									RA MEDLINE; 88257102.	
RT	J. BIOL. CHEM. 263:9746-9751(1988).									RA POLLOCK H.G., HAMILTON J.W., ROUSE J.B., EBNER K.E., RAWITCH A.B.;	
RT	THE BLOOD SUGAR LEVEL.									RT RT "Isolation of peptide hormones from the pancreas of the bullfrog (Rana catesbeiana). Amino acid sequences of pancreatic polypeptide, oxyntomodulin, and two glucagon-like peptides.";	
CC	-!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.									RT RT J. BIOL. CHEM. 263:9746-9751(1988).	
CC	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.									CC -!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH OTHER SPECIES	
CC	SEQUENCES.									CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.									DR PIR; B28091; GCFGB.	
DR	PROSITE; PS00260; GLUCAGON; 3.									DR PROSITE; PS00260; GLUCAGON; 3.	
DR	1 hgeglftsdlskqmeeeavrfliewlkngqp	31								QY 1 hgeglftsdlskqmeeeavrfliewlkngqp	31

RESULT 5  
ID GLUM ANGAN STANDARD; PRT; 30 AA.  
AC P4151;  
DT 01-NOV-1995 (REL. 32, CREATED)  
DT 01-NOV-1995 (REL. 32, LAST SEQUENCE UPDATE)  
DT 01-NOV-1995 (REL. 32, LAST ANNOTATION UPDATE)  
DE GLUCAGON-LIKE PEPTIDE (GLP).  
OS ANGUILLA ANGUILLA (EUROPEAN FRESHWATER EEL), AND  
OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
OC TELEOSTEI; ANGUILLIFORMES; ANGUILLIDAE; ANGUILLA.  
RN [1]  
RP TISSUE-PANCREAS.  
RX MEDLINE; 9134068.  
RA CONLON J.M., ANDREWS P.C., THIM L., MOON T.W.;  
RT "The primary structure of glucagon-like peptide but not insulin has  
been conserved between the American eel, *Anguilla rostrata* and the  
European eel, *Anguilla anguilla*.";  
RT GEN. COMP. ENDOCRINOL. 82:23-32(1991).  
RN [1]  
-- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
PIR; B6115; B61125;  
PIR; C61125; C51125;  
DR PROSITE; PS00260; GLUCAGON; 1.  
DR PF00123; hormone2; 1.  
DR HSSP; P01274; IGCN.  
KW GLUCAGON FAMILY; AMIDATION.  
-- MOD-RES 30  
-- SEQUENCE 30 AA; 3376 MW; 27E8C3D CRC32;  
Query Match 53.3%; Score 121; DB 1; Length 30;  
Best Local Similarity 48.3%; Pred. No. 2.07e-08;  
Matches 14; Conservative 9; Mismatches 6; Indels 0; Gaps 0;  
Db 1 HAEGTYSDFSYSSLQDAAKEFVSPLKTG 29  
:|:||:||:||:||:||:||:||:||:||:  
:1 hgegtftsdskqmeeavrfliewlkng 29  
-->  
PREDICT 6  
ID GLUC\_LEPSP STANDARD; PRT; 78 AA.  
AC P09565;  
DT 01-MAR-1989 (REL. 10, CREATED)  
DT 01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)  
DT 01-FEB-1994 (REL. 28, LAST ANNOTATION UPDATE)  
UL GLUCAGON PRECURSOR (FRAGMENT).  
CC LEPISOTEUS SPATULA (ALLIGATOR GAR) (ATRACTOSTEUS SPATULA).  
CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
CC SEMIONOTIFORMES; LEPISOSTEIDAE; LEPISOSTEUS.  
CC [1]  
-->  
SEQUENCE OF 1-36 AND 45-78.  
RX MEDLINE; 88919678.  
RA POLLACK H.G., KIMMEL J.R., HAMILTON J.W., ROUSE J.B.,  
RA LANCE V., RAWITCH A.B.;  
RT "Isolation of alligator gar (*Lepisosteus spatula*) glucagon,  
oxymodulin, and glucagon-like peptide; amino acid sequences of  
insulin and pancreatic polypeptide.";  
RT GEN. COMP. ENDOCRINOL. 69:133-140(1988).  
RN [2]  
RP PRELIMINARY SEQUENCE OF 1-29.  
PC TISSUE-PANCREAS;  
RX MEDLINE; 88030594.  
RA POLLACK H.G., KIMMEL J.R., HAMILTON J.W., ROUSE J.B., EBNER K.E.,  
RA LANCE V., RAWITCH A.B.;  
RT "Isolation and structures of alligator gar (*Lepisosteus spatula*)  
insulin and pancreatic polypeptide.";  
RT GEN. COMP. ENDOCRINOL. 67:375-382(1987).  
CC -1- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.  
CC -1- INDUCTION: PRODUCED IN THE CELLS OF THE ISLETS OF LANGERHANS  
IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.

CC -!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN  
GOOSEFISH SEQUENCES.  
CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
CC PIR; S0639; GCGA.  
DR PROSITE; PS00260; GLUCAGON; 2.  
DR PFAM; F00033; hormone2; 2.  
DR HSSP; P01274; IGCN.  
KW GLUCAGON FAMILY; HORMONE.  
FT PEPTIDE 1 29  
FT PEPTIDE 1 36 GLUCAGON.  
FT PEPTIDE 45 78 GLUCAGON-LIKE PEPTIDE.  
SQ SEQUENCE 78 AA; 8990 MW; 509ED9D3 CRC32;  
Query Match 52.4%; Score 119; DB 1; Length 78;  
Best Local Similarity 44.8%; Pred. No. 4.95e-08;  
Matches 13; Conservative 10; Mismatches 6; Indels 0; Gaps 0;  
Db 45 HADGNTYTSDFSYSLQDOAKKFVTLKQG 73  
:|:||:||:||:||:||:||:||:  
:1 hgegtftsdskqmeeavrfliewlkng 29  
-->  
RESULT 7  
ID GLUC\_CARA0 STANDARD; PRT; 121 AA.  
AC P79655;  
DT 01-NOV-1997 (REL. 35, CREATED)  
DT 01-NOV-1997 (REL. 35, LAST SEQUENCE UPDATE)  
DT 01-NOV-1997 (REL. 35, LAST ANNOTATION UPDATE)  
DE GLUCAGON PRECURSOR.  
OS CARASSIUS AURATUS (GOLDFISH).  
CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
CC TELEOSTEI; EUTELOSTEI; OSTIAZOPHSI; CYPRINIFORMES; CYPRINOIDEA;  
CC CYPRINIDAE; CYPRININA; CARASSIUS.  
RN [1]  
RP SEQUENCE FROM N.A.  
RA YUEN T.T.H., MOK P.Y., CHOW B.K.C.;  
RL SUBMITTED (FEB-1997) TO EMBL/GENBANK/DBJ DATA BANKS.  
CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.  
CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
CC -->  
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CC or send an email to license@isb-sib.ch.  
CC -->  
CC EMBL: U65528; G176277;  
DR PROSITE; PS00260;  
DR PFAM; P00123; hormone2; 2.  
DR HSSP; P01274; IGCN.  
KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.  
FT SIGNAL 1 21 POTENTIAL.  
FT PEPTIDE 22 47 GLUCINE RELATED POLYPEPTIDE.  
FT PEPTIDE 50 78 GLUCAGON-LIKE PEPTIDE.  
SQ SEQUENCE 121 AA; 13527 MW; DDB662CE CRC32;  
Query Match 52.4%; Score 119; DB 1; Length 121;  
Best Local Similarity 48.4%; Pred. No. 4.95e-08;  
Matches 15; Conservative 9; Mismatches 7; Indels 0; Gaps 0;  
Db 88 HAEGTYTSDFSYSLQDOAKKFVTLKQG 118  
:|:||:||:||:||:||:||:  
:1 hgegtftsdskqmeeavrfliewlkng 31  
-->  
RESULT 8  
ID GLU2\_JOPAM STANDARD; PRT; 122 AA.  
AC P04092;  
DT 01-NOV-1986 (REL. 03, CREATED)

DT 01-NOV-1986 (REL. 03, LAST SEQUENCE UPDATE)  
 DT 15-DEC-1988 (REL. 37, LAST ANNOTATION UPDATE)  
 DE GLUCAGON II PRECURSOR.  
 OS LOPHTUS AMERICANUS (AMERICAN GOOSEFISH) (ANGLEFISH).  
 OC EUKARYOTA; METAZOI; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 OC TELEOSTEI; EUTELEOSTEI; PARACANTHOPTERYGII; LOPHIIFORMES; LOPHIIDAE;  
 OC LOPHTUS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX P.M.  
 RA LUND P.K.; GOODMAN R.H.; MONTMINY M.R.; DEE P.C.; HABENER J.F.;  
 RT "Anglerfish islet pre-proglucagon III. Nucleotide and corresponding  
 amino acid sequence of the cDNA."  
 RL J. BIOL. CHEM. 258:3280-3284(1983).

[2]  
 RN PROCESSING.  
 RD MEDLINE: 86286913.

NOE B.D.; ANDREWS P.C.;  
 RT "Specific glucagon-related peptides isolated from anglerfish islets  
 are metabolic cleavage products of (pre)proglucagon-II.";  
 RT PEPTIDES 7:331-339(1986).

CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES  
 THE BLOOD SUGAR LEVEL.  
 CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
 IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
 CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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CC  
 DR V0032; G64022; -.  
 DR EMBL: J00333; G213333; -.  
 DR PIR: A05150; GCAF2.  
 DR PROTE; PS00260; GLUCAGON; 2.  
 DR PFAM; PF00123; hormone2; 2.  
 DR HSSP; P01274; IGCN.  
 RN GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.  
 FT SIGNAL 1 21  
 PR PEPTIDE 22 49  
 PEPTIDE 52 90  
 PEPTIDE 89 119  
 PEPTIDE 122 AA; 14171 MW; DFE63061 CRC32;

SEQUENCE Score 118; DB 1; Length 122;  
 Best Local Similarity 44.8%; Pred. No. 7 64e-08;  
 Matches 13; Conservative 10; Mismatches 6; Indels 0; Gaps 0;

Db 89 HADGTYTSDYSSYLQDQAARDFYSWIKAG 117  
 QY 1 hgegtftsdiskqmeearvlfiwvkg 29

RESULT 9  
 ID GLUC\_ONCII: STANDARD; PRT; 68 AA.  
 AC P07449;  
 DT 01-APR-1988 (REL. 07, CREATED)  
 DT 01-APR-1988 (REL. 07, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1990 (REL. 16, LAST ANNOTATION UPDATE)  
 DE GLUCAGON PRECURSOR (FRAGMENT).  
 OS ONCORHYNCHUS KISUTCH (COHO SALMON).  
 OC EUKARYOTA; METAZOI; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES;  
 OC SALMONIDAE; ONCORHYNCHUS.  
 RN [1]  
 RP SEQUENCE. 86234328.  
 RX MEDLINE: PLISETSKAYA E., POLLACK H.G., ROUSE J.B., HAMILTON J.W., KIMMEL J.R.,  
 RA GORBMAN A.;

AC	P01274;	Best Local Similarity	55.2%;	Pred. No.	2.79e-07;	
DT	21-JUL-1996 (REL. 01, CREATED)	Matches	16; Conservative	6; Mismatches	7; Indels	
PR	01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)	0; Gaps	0;			
DT	15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)					
DE	GLUCAGON PRECURSOR (FRAGMENT).					
GN	GGC.					
OS	SUS SCROFA (PIG).					
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUETHERIA;					
OC	ARTIODACTyla; SUIFORMES; SUINA; SUIDAE; SUS.					
RN	[1]	RESULT	12	ID GLUC_HOUSE STANDARD; PRT; 180 AA.		
RP	SEQUENCE.	ID	P55093;			
RX	MEDLINE; 81248172.	AC	01-OCT-1996 (REL. 34, CREATED)			
RA	THIM L., MOODY A.J.;	DT	01-OCT-1996 (REL. 34, LAST SEQUENCE UPDATE)			
RT	"The primary structure of porcine glicentin (proglucagon).";	DT	15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE)			
RL	REGUL. PEPT. 2:139-150(1981).	DE	GLUCAGON PRECURSOR.			
RN	[2]	GCN.				
RP	SEQUENCE.	OS	MUS MUSCULUS (MOUSE).			
RX	MEDLINE; 82221776.	OC	METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUETHERIA;			
RA	THIM L., MOODY A.J.;	OC	RODENTIA; SCIDURGNATHI; MURIDAE; MURINA; MUS.			
RL	"The amino acid sequence of porcine glicentin.";	RN	[1]			
RT	PEPTIDES 2 SUPPL. 2:37-39(1981).	RP	SEQUENCE FROM N.A.			
RL	"The amino acid sequence of porcine glicentin.";	RC	TISSUE-PANCREATIC ISLETS;			
RT	acid degradation studies and summary of sequential evidence.";	RX	MEDLINE; 91247732.			
RL	J. AM. CHEM. SOC. 79:2807-2810(1957).	RA	ROTENBERG M.E., ELLERTSON C.D., KLEIN K., ZHOU Y., LINBERG I.,			
RP	[4]	RA	MCDONALD J.K., HACKIN R.B., NOE B.D.;			
RN	SEQUENCE OF 78-107.	RT	"Processing of mouse proglucagon by recombinant prohormone convertase 1 and immunopurified prohormone convertase 2 in vitro".			
RP	89:227238.	RL	J. BIOL. CHEM. 270:10136-10146(1995).			
RX	MEDLINE; 89327238.	CC	-1- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.			
RA	ORSKOV C., BERSANI M., JOHNSEN A.H., HOEJRUP P., HOLST J.J.;	CC	-1- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS			
RT	"Complete sequences of glucagon-like peptide-1 from human and pig small intestine.";	CC	-1- IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.			
RT	RT	CC	-1- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.			
RL	J. BIOL. CHEM. 264:12826-12829(1989).	CC				
RN	[5]	CC				
RP	SEQUENCE OF 111-158.	CC	This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL Outstation - the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (see <a href="http://www.ebi.ac.uk/announce">http://www.ebi.ac.uk/announce</a> or send an email to license@ebi.ac.uk).			
RA	RAHMAN T., KOFOD H., ORSKOV C., HARLING H., HOLST J.J.;	CC	CC			
RT	"Naturally occurring products of proglucagon 111-160 in the porcine and human small intestine.";	CC	CC			
RT	J. BIOL. CHEM. 263:8621-8624(1988).	CC	CC			
RL	[6]	CC	CC			
RN	RP	CC	CC			
RX	X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).	CC	CC			
RA	MEDLINE; 76051297.	DR	EMBL; 246845; GS99881; -.			
RT	SASAKI K., DOCKERILL S., ADAMIAK D.A., TICKLE I.J., BLUNDELL T.L.;	DR	MGI; 955674; GCG.			
RT	"X-ray analysis of glucagon and its relationship to receptor binding.";	PFAM	PS00260; GLUCAGON; 4.			
RT	NATURE 251:751-757(1975).	DR	PFAM; PE00123; Hormone2; 3.			
CC	-1- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	KW	GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL BY SIMILARITY.			
CC	-1- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS	FT	SIGNAL 1 20 GRPP (GLICENTINE RELATED POLYPEPTIDE).			
CC	-1- IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.	FT	PEPTIDE 21 50 GLUCAGON.			
CC	-1- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH HUMAN.	FT	PEPTIDE 53 81 GLUCAGON-LIKE PEPTIDE 1.			
CC	SEQUENCE.	FT	PEPTIDE 92 126 GLUCAGON-LIKE PEPTIDE 2.			
CC	-1- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	FT	PEPTIDE 146 178 GLUCAGON-LIKE PEPTIDE 2.			
DR	PTR: A01540; GCPG.	SEQUENCE	SEQUENCE 180 AA; 20906 MW; OB21B7BA CRC32; -.			
DR	PROSITE; 30-SEP-83.	DR	DR			
DR	PROSITE; PS00260; GLUCAGON.	PROSITE	PROSITE; PS00260; GLUCAGON.			
LX	PFAM; PE00123; Hormone2; 3.	PFAM	PFAM; PE00123; Hormone2; 3.			
KW	GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES;	KW	GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES;			
KW	3D-STRUCTURE.	FT	3D-STRUCTURE.			
FT	NON TER 1 1 GRPP (GLICENTINE RELATED POLYPEPTIDE).	FT	NON TER 1 1 GRPP (GLICENTINE RELATED POLYPEPTIDE).			
FT	PEPTIDE 1 30 GLUCAGON.	FT	PEPTIDE 1 30 GLUCAGON.			
FT	PEPTIDE 33 61 GLUCAGON-LIKE PEPTIDE 1.	FT	PEPTIDE 33 61 GLUCAGON-LIKE PEPTIDE 1.			
FT	PEPTIDE 78 107 GLUCAGON-LIKE PEPTIDE 2.	FT	PEPTIDE 78 107 GLUCAGON-LIKE PEPTIDE 2.			
FT	PEPTIDE 126 158 GLUCAGON-LIKE PEPTIDE 2.	FT	PEPTIDE 126 158 GLUCAGON-LIKE PEPTIDE 2.			
FT	HELIX 39 42	FT	HELIX 39 42			
r1	TURN 43 45	TURN	TURN 43 45			
r1	HELIX 46 55	HELIX	HELIX 46 55			
r1	TURN 56 57 FBBC1BPE CRC32;	TURN	TURN 56 57 FBBC1BPE CRC32;			
SQ	SEQUENCE 158 AA; 18212 MW; 0B21B7BA CRC32;	SQ	SEQUENCE 158 AA; 18212 MW; 0B21B7BA CRC32;			
	Query Match		Query Match			
	50.7%		50.7%			
	score 115; DB 1; Length 158;		score 115; DB 1; Length 180;			
AC	P01274;	Best Local Similarity	55.2%;	Pred. No.	2.79e-07;	
DT	21-JUL-1996 (REL. 01, CREATED)	Matches	16; Conservative	6; Mismatches	7; Indels	
PR	01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)	0; Gaps	0;			
DT	15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)					
DE	GLUCAGON PRECURSOR (FRAGMENT).					
GN	GGC.					
OS	SUS SCROFA (PIG).					
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUETHERIA;					
OC	ARTIODACTyla; SUIFORMES; SUINA; SUIDAE; SUS.					
RN	[1]	RESULT	12	ID GLUC_HOUSE STANDARD; PRT; 180 AA.		
RP	SEQUENCE.	ID	P55093;			
RX	MEDLINE; 81248172.	AC	01-OCT-1996 (REL. 34, CREATED)			
RA	THIM L., MOODY A.J.;	DT	01-OCT-1996 (REL. 34, LAST SEQUENCE UPDATE)			
RT	"The primary structure of porcine glicentin (proglucagon).";	DT	15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE)			
RL	REGUL. PEPT. 2:139-150(1981).	DE	GLUCAGON PRECURSOR.			
RN	[2]	GCN.				
RP	SEQUENCE.	OS	HOMO SAPIENS (HUMAN).			
RX	MEDLINE; 82221776.	OC				
RA	THIM L., MOODY A.J.;	RN				
RL	"The amino acid sequence of porcine glicentin.";	RP				
RT	PEPTIDES 2 SUPPL. 2:37-39(1981).	RC				
RL	"The amino acid sequence of porcine glicentin.";	RX				
RT	acid degradation studies and summary of sequential evidence.";	RA				
RL	J. AM. CHEM. SOC. 79:2807-2810(1957).	RT				
RP	[4]	PEPTIDE				
RN	SEQUENCE OF 78-107.	PEPTIDE				
RP	89:227238.	PEPTIDE				
RX	MEDLINE; 89327238.	PEPTIDE				
RA	ORSKOV C., BERSANI M., JOHNSEN A.H., HOEJRUP P., HOLST J.J.;	PEPTIDE				
RT	"Complete sequences of glucagon-like peptide-1 from human and pig small intestine.";	PEPTIDE				
RT	J. BIOL. CHEM. 264:12826-12829(1989).	PEPTIDE				
RL	J. BIOL. CHEM. 264:12826-12829(1989).	PEPTIDE				
RN	[5]	PEPTIDE				
RP	SEQUENCE OF 111-158.	PEPTIDE				
RA	RAHMAN T., KOFOD H., ORSKOV C., HARLING H., HOLST J.J.;	PEPTIDE				
RT	"Naturally occurring products of proglucagon 111-160 in the porcine and human small intestine.";	PEPTIDE				
RT	J. BIOL. CHEM. 263:8621-8624(1988).	PEPTIDE				
RL	[6]	PEPTIDE				
RN	RP	PEPTIDE				
RX	X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).	PEPTIDE				
RA	MEDLINE; 76051297.	PEPTIDE				
RT	SASAKI K., DOCKERILL S., ADAMIAK D.A., TICKLE I.J., BLUNDELL T.L.;	PEPTIDE				
RT	"X-ray analysis of glucagon and its relationship to receptor binding.";	PEPTIDE				
RT	NATURE 251:751-757(1975).	PEPTIDE				
CC	-1- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	PEPTIDE				
CC	-1- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS	PEPTIDE				
CC	-1- IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.	PEPTIDE				
CC	-1- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH HUMAN.	PEPTIDE				
CC	SEQUENCE.	PEPTIDE				
CC	-1- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	PEPTIDE				
DR	PTR: A01540; GCPG.	PEPTIDE				
DR	PROSITE; 30-SEP-83.	PEPTIDE				
DR	PROSITE; PS00260; GLUCAGON.	PEPTIDE				
LX	PFAM; PE00123; Hormone2; 3.	PEPTIDE				
KW	GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES;	PEPTIDE				
KW	3D-STRUCTURE.	PEPTIDE				
FT	NON TER 1 1 GRPP (GLICENTINE RELATED POLYPEPTIDE).	PEPTIDE				
FT	PEPTIDE 1 30 GLUCAGON.	PEPTIDE				
FT	PEPTIDE 33 61 GLUCAGON-LIKE PEPTIDE 1.	PEPTIDE				
FT	PEPTIDE 78 107 GLUCAGON-LIKE PEPTIDE 2.	PEPTIDE				
FT	PEPTIDE 126 158 GLUCAGON-LIKE PEPTIDE 2.	PEPTIDE				
FT	HELIX 39 42	PEPTIDE				
r1	TURN 43 45	TURN				
r1	HELIX 46 55	HELIX				
r1	TURN 56 57 FBBC1BPE CRC32;	TURN				
SQ	SEQUENCE 158 AA; 18212 MW; 0B21B7BA CRC32;	SQ				
	Query Match		Query Match			
	50.7%		50.7%			
	score 115; DB 1; Length 158;		score 115; DB 1; Length 180;			
AC	P01274;	Best Local Similarity	55.2%;	Pred. No.	2.79e-07;	
DT	21-JUL-1996 (REL. 01, CREATED)	Matches	16; Conservative	6; Mismatches	7; Indels	
PR	01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)	0; Gaps	0;			
DT	15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)					
DE	GLUCAGON PRECURSOR.					
GN	GGC.					
OS	HOMO SAPIENS (HUMAN).					



Best Local Similarity 55.2%; Pred. No. 2.79e-07;  
 Matches 16; Conservative 6; Mismatches 7; Indels 0; Gaps 0;  
 PRT: 158 AA.

Db 98 HAEGLFTSDSSYLEGAAKEFIAWLYKG 126  
 Qry 1 hgegtftsdlskqmeearvrliewlkng 29

RESULT 15 STANDARD PRT: 180 AA.  
 ID GLUC\_OCTDDE  
 AC P22950;  
 DT 01-AUG-1991 (REL. 19, CREATED)  
 DT 01-AUG-1991 (REL. 19, LAST SEQUENCE UPDATE)  
 DT 21-JUL-1993 (REL. 26, LAST ANNOTATION UPDATE)  
 RP GLUCAGON PRECURSOR.  
 RC OCTODON DEGUS (DEGU).  
 EC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;  
 UC RODENTIA; HYSTRICOGNATHI; OCTODONTIDAE; OCTODON.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE: 9115552.  
 RN NISHI M., STEINER D. F.;  
 "Cloning of complementary DNAs encoding islet amyloid polypeptide,  
 insulin, and glucagon precursors from a New World rodent, the degu,  
 Octodon degus." ;  
 MOL. ENDORPHINOL. 4:1192-1198(1990).

CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES  
 CC THE BLOOD SUGAR LEVEL.  
 CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
 CC IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
 CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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DR EMBL: M57988; G202458; -.  
 DR PIR: C3618; GCRDU.  
 DR PROSITE: PS00260; GLUCAGON; 4.  
 DR PFAM: PF00123; hormone2; 3.  
 DR HSPP; P0124; IGCN.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES: SIGNAL;  
 KW AMIDATION.

P1 SIGNAL 1 20 GRPP (GLYCINE RELATED POLYPEPTIDE).  
 FT PEPTIDE 21 50 GLUCAGON.  
 ER PEPTIDE 53 81 GLUCAGON-LIKE PEPTIDE 1.  
 PEPTIDE 92 127 GLUCAGON-LIKE PEPTIDE 2.  
 PEPTIDE 146 178 AMIDATION (G-1128 PROVIDE AMIDE GROUP).  
 RT MOD\_RES 127 127  
 SQ SEQUENCE 180 AA; 21165 MW; 4A1FCE3 CRC32;

Query Match Score 115; DB 1; Length 180;  
 Best Local Similarity 55.2%; Pred. No. 2.79e-07;  
 Matches 16; Conservative 6; Mismatches 7; Indels 0; Gaps 0;

Db 98 HAEGLFTSDSSYLEGAAKEFIAWLYKG 126  
 Qry 1 hgegtftsdlskqmeearvrliewlkng 29

Search completed: Mon Oct 4 15:23:02 1999  
 Job time : 6 secs.

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Release 3.1A. John F. Collins, Biocomputing Research Unit.

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Mpsrch\_pp protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:23:19 1999; Maspar time 10.07 seconds

168.071 Million cell updates/sec

not generated.

&gt;MOHAM-312-CLAIM82A.PEP

(1-31) from moham312177.pep

Sequence: 1 hgsgfttsdalskqmeeeavrfliewlknggg 31

Scoring table: PAM 150

Gap 11

Searched: 179066 seqs., 54579741 residues

Post-processing: Minimum Match 0%

Listing first 45 summaries

Database:

sptrembl9  
 1:sp\_archaea 2:sp\_bacteria 3:sp\_fungi 4:sp\_human  
 5:sp\_invertebrate 6:sp\_mammal 7:sp\_mhc 8:sp\_organelle  
 9:sp\_phage 10:sp\_plant 11:sp\_rabbit 12:sp\_unclassified  
 13:sp\_vertebrate 14:sp\_virus

Statistics: Mean 33.361; Variance 61.380; scale 0.544

Pred. Nc. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Suit	No.	Score	Query Match	Length	DB	ID	Description	Pred. No.	----
1	154	67.8	266	13	042143	PROGLUCAGON I.	1.68e-13		
2	155	66.5	219	13	042144	PROGLUCAGON II.	6.15e-13		
3	120	52.9	66	13	091188	GLUCAGON (FRAGMENT)	2.67e-07		
4	120	52.9	72	13	Q91409	PROGLUCAGON (FRAGMENT)	2.67e-07		
5	120	52.9	72	13	Q91408	PROGLUCAGON (FRAGMENT)	2.67e-07		
6	120	52.9	178	13	Q91971	GLUCAGON I.	2.67e-07		
7	120	52.9	178	13	Q91189	GLUCAGON II.	2.67e-07		
8	114	50.2	206	13	Q91410	PROGLUCAGON.	2.94e-06		
9	108	47.6	149	13	Q92955	PROGLUCAGON.	3.10e-05		
10	108	47.6	204	13	Q12956	PROGLUCAGON.	3.10e-05		
11	95	41.9	212	14	057294	L PROTEIN, RNA DEPENDENT PROTEINASE, RNA DEPENDE	4.25e-03		
12	86	37.9	552	9	Q30064	REPLICASE.	1.08e-01		
13	78	34.4	379	2	Q85163	HYPOTHETICAL 42.3 KD P	1.66e-00		
14	77	33.9	414	5	Q21764	R05H5.4 PROTEIN.	2.31e-00		
15	76	33.5	300	1	Q59151	3.00AA LONG HYPOTHETICA OS	3.20e-00		
16	76	33.5	1015	2	Q61746	PROGRAMMED DEHYDROGENASE	3.20e-00		
17	76	33.5	1086	4	Q11423	NICOTINAMIDE NUCLEOTID	3.20e-00		
18	76	33.5	1086	4	Q15796	NAD(P) TRANSHYDROGENAS	3.20e-00		
19	76	33.5	1086	11	Q61941	NICOTINAMIDE NUCLEOTID	3.20e-00		
20	75	33.0	324	4	C616107	1.58e+01	4.43e+00		

\* Query

Suit No. Score Match Length DB ID Description

RESULT 1

ID 042143

AC 02143;

DT 01-JAN-1998 (TREMBLREL. 05, CREATED)

DT 01-JAN-1998 (TREMBLREL. 05, LAST SEQUENCE UPDATE)

DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

DE PROGLUCAGON I.

OS XENOPUS LAEVIS (AFRICAN CLAWED FROG)

EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; AMPHIBIA; BATRACHIA; ANURA;

OC MESOBATRACHIA; PIPOIDEA; XENOPODINA; XENOPUS.

RA [1]

RA IRWIN D.M.; SATKUNARAJAH M.; WEN Y.; BRUBAKER P.L.; PEDERSON R.A.; WHEELER M.B.;

RA RT "The Xenopus proglucagon gene encodes novel GIP-1-like peptides with insulinotropic properties."

RL PROC: NATL. ACAD. SCI. U.S.A. 94:7915-7920(1997).

EMBL; AF004432; G230516;

DR PROSITE: PS00260; GLUCAGON; 5.

DR PFAM: PF00123; hormone; 5.

SQ SEQUENCE 266 AA; 30951 MW; E6139A25 CRC32;

Query Match 67.8% Score 154; DB 13; Length 266;  
 Best Local Similarity 61.3% Pred. No. 1.68e-13;  
 Matches 19; Conservative 7; Mismatches 5; Indels 0; Gaps 0;

RESULT 2

ID 042144 PRELIMINARY; PRT; 219 AA.

Query Match 67.8% Score 154; DB 13; Length 266;

Best Local Similarity 61.3% Pred. No. 1.68e-13;

Matches 19; Conservative 7; Mismatches 5; Indels 0; Gaps 0;

DB 97 HAGETSETSDVQOLDEKAKEFDDWLGGP 127

QY 1 hgsgfttsdalskqmeeeavrfliewlknggg 31

Query Match 67.8% Score 154; DB 13; Length 266;

Best Local Similarity 61.3% Pred. No. 1.68e-13;

Matches 19; Conservative 7; Mismatches 5; Indels 0; Gaps 0;

DB 97 HAGETSETSDVQOLDEKAKEFDDWLGGP 127

QY 1 hgsgfttsdalskqmeeeavrfliewlknggg 31

Query Match 67.8% Score 154; DB 13; Length 266;

Best Local Similarity 61.3% Pred. No. 1.68e-13;

Matches 19; Conservative 7; Mismatches 5; Indels 0; Gaps 0;

DB 97 HAGETSETSDVQOLDEKAKEFDDWLGGP 127

QY 1 hgsgfttsdalskqmeeeavrfliewlknggg 31

Query Match 67.8% Score 154; DB 13; Length 266;

Best Local Similarity 61.3% Pred. No. 1.68e-13;

Matches 19; Conservative 7; Mismatches 5; Indels 0; Gaps 0;

DB 97 HAGETSETSDVQOLDEKAKEFDDWLGGP 127

QY 1 hgsgfttsdalskqmeeeavrfliewlknggg 31

Query Match 67.8% Score 154; DB 13; Length 266;

Best Local Similarity 61.3% Pred. No. 1.68e-13;

Matches 19; Conservative 7; Mismatches 5; Indels 0; Gaps 0;

DB 97 HAGETSETSDVQOLDEKAKEFDDWLGGP 127

QY 1 hgsgfttsdalskqmeeeavrfliewlknggg 31

SEQUENCE FROM N.A.

RP



Y> >thes 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0; RESULT 9  
 ID 012955 PRELIMINARY; PRT; 149 AA.  
 AC 012955;  
 DT 01-JUL-1997 (TREMBLREL. 04, CREATED)  
 DT 01-JUL-1997 (TREMBLREL. 04, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)  
 DE PROLGAGCN.  
 GN LPI.  
 CS HELODERMA SUSPECTUM (GILA MONSTER).  
 CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; LEPIDOSAURIA; SQUAMATA;  
 CC SCLEROGLOSSA; ANGUILMORPHA; HELODERMATIDAE; HELODERMA.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RA CHEN Y.E., DRUCKER D.J.;  
 RL J. BIOL. CHEM. 0:0-(0).  
 EMBL; U77511; G1915063;  
 DR PROSITE; PS00260; GLUCAGON; 1.  
 PFAM; PF00123; hormone2; 2.  
 SQ SEQUENCE 149 AA; 17224 MW; F763AB51 CRC32;  
 Query Match 47.6%; Score 108; DB 13; Length 149;  
 Best Local Similarity 48.3%; Pred. No. 3.10e-05;  
 Matches 14; Conservative 7; Mismatches 8; Indels 0; Gaps 0;

RESULT 7  
 ID 091189 PRELIMINARY; PRT; 178 AA.  
 AC 091189; Q92168;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)  
 DE GLUCAGON II.  
 OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).  
 OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPERYGII; NEOPTERYGII;  
 OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPERTYGI; SALMONIFORMES; SALMONIDAE;  
 OC ONCORHYNCHUS.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RC MEDLINE; 95295739.  
 IRWIN D.M., WONG J.;  
 "Trout and chicken proglucagon: alternative splicing generates mRNA  
 transcripts encoding glucagon-like peptide 2.\*".  
 MOL. ENDOCRINOL. 9:267-277(1995).  
 DR EMBL; U19914; G736363; -.  
 DR EMBL; U19916; G736372; -.  
 DR EMBL; U19915; G736372; JOINED.  
 DR EMBL; U19915; G736371; -.  
 DR PFAM; PF00123; hormone2; 3.  
 SQ SEQUENCE 178 AA; 19998 MW; A4299C13 CRC32;  
 Query Match 52.9%; Score 120; DB 13; Length 178;  
 Best Local Similarity 44.8%; Pred. No. 2.67e-07;  
 Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;

RESULT 8  
 ID Q91410 PRELIMINARY; PRT; 206 AA.  
 AC Q91410;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)  
 DE PROGLUCAGON.  
 OS GALLUS GALLUS (CHICKEN).  
 EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ARCHOSAURIA; AVES;  
 NEOGNATHAE; GALLIFORMES; PHASIANIDAE; GALLUS.  
 RN SEQUENCE FROM N.A.  
 RX MEDLINE; 95295739.  
 RA IRWIN D.M., WONG J.;  
 RT "Trout and chicken proglucagon: alternative splicing generates mRNA  
 transcripts encoding glucagon-like peptide 2.\*".  
 MOL. ENDOCRINOL. 9:267-277(1995).  
 DR PROSITE; PS00260; GLUCAGON; 3.  
 DR PFAM; PF00123; hormone2; 3.  
 SQ SEQUENCE 206 AA; 23875 MW; 8EC91118 CRC32;  
 Query Match 50.2%; Score 114; DB 13; Length 206;  
 Best Local Similarity 51.7%; Pred. No. 2.94e-06;  
 Matches 15; Conservative 7; Mismatches 7; Indels 0; Gaps 0;

RESULT 9  
 ID 012955 PRELIMINARY; PRT; 149 AA.  
 AC 012955;  
 DT 01-JUL-1997 (TREMBLREL. 04, CREATED)  
 DT 01-JUL-1997 (TREMBLREL. 04, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)  
 DE PROLGAGCN.  
 GN LPI.  
 CS HELODERMA SUSPECTUM (GILA MONSTER).  
 CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; LEPIDOSAURIA; SQUAMATA;  
 CC SCLEROGLOSSA; ANGUILMORPHA; HELODERMATIDAE; HELODERMA.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RA CHEN Y.E., DRUCKER D.J.;  
 RL J. BIOL. CHEM. 0:0-(0).  
 EMBL; U77511; G1915063;  
 DR PROSITE; PS00260; GLUCAGON; 1.  
 PFAM; PF00123; hormone2; 2.  
 SQ SEQUENCE 149 AA; 17224 MW; F763AB51 CRC32;  
 Query Match 47.6%; Score 108; DB 13; Length 149;  
 Best Local Similarity 48.3%; Pred. No. 3.10e-05;  
 Matches 14; Conservative 7; Mismatches 8; Indels 0; Gaps 0;

RESULT 10  
 ID 012956 PRELIMINARY; PRT; 204 AA.  
 AC 012956;  
 DT 01-JUL-1997 (TREMBLREL. 04, CREATED)  
 DT 01-JUL-1997 (TREMBLREL. 04, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)  
 DE PROLGAGCN.  
 GN LPII.  
 CS HELODERMA SUSPECTUM (GILA MONSTER).  
 CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; LEPIDOSAURIA; SQUAMATA;  
 CC SCLEROGLOSSA; ANGUILMORPHA; HELODERMATIDAE; HELODERMA.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RA CHEN Y.E., DRUCKER D.J.;  
 RL J. BIOL. CHEM. 0:0-(0).  
 EMBL; U77512; G1915065;  
 DR PROSITE; PS00260; GLUCAGON; 2.  
 PFAM; PF00123; hormone2; 3.  
 SQ SEQUENCE 204 AA; 23553 MW; EE50250D CRC32;  
 Query Match 47.6%; Score 108; DB 13; Length 204;  
 Best Local Similarity 48.3%; Pred. No. 3.10e-05;  
 Matches 14; Conservative 7; Mismatches 8; Indels 0; Gaps 0;

RESULT 11  
 ID 057294 PRELIMINARY; PRT; 2127 AA.  
 AC 057294;  
 DT 01-JUN-1998 (TREMBLREL. 06, CREATED)  
 DT 01-JUN-1998 (TREMBLREL. 06, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 06, LAST ANNOTATION UPDATE)  
 DE L PROTEIN, RNA DEPENDENT RNA POLYMERASE.  
 GN L.  
 OS RABIES VIRUS.  
 OC VIRUSES; SSRNA NEGATIVE-STRAND VIRUSES; MONONEGAVIRALES;  
 OC LYSSAVIRUS.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RP STRAIN=RC-HL;  
 RC MINAMOTO N.;  
 RA

Query Match 119 HADGRYTSDISSTILEGGQAAKFETAWLYNG 146  
 Best Local Similarity 119.0%; Pred. No. 1.00e-05;  
 Matches 15; Conservative 7; Mismatches 29

Query Match 119 HADGRYTSDISSTILEGGQAAKFETAWLYNG 146  
 Best Local Similarity 119.0%; Pred. No. 1.00e-05;  
 Matches 15; Conservative 7; Mismatches 29



Tue Oct 5 09:37:30 1999

MOHAM-3112-CLAIM82A.PEP.rspt

Page 5

"Complete Sequence and Gene Organization of the Genome of a Hyper-thermophilic Archaeabacterium, Pyrococcus horikoshii OT3.";

DNA RES 5:55-76(1998);  
EMBL; APO0006; D10315;2;

PROSITE; PS00782; TFIIB; 2.

INITIATION FACTOR.

SEQUENCE 300 AA; 34097 MW;

6E17BB64 CRC32;

Query Match 33 5%; Score 76; DB 1; Length 300;  
Best Local Similarity 50.0%; Pred. No. 3.20+00;

Matches 10; Conservative 7; Mismatches 3; Indels 0; Gaps 0;

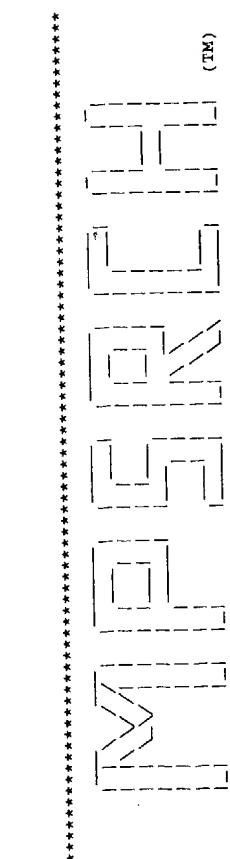
Db 125 LPKHEEEFAARLYREAVRK 144

1:::1||| ||: | :::|  
10 lskgmeeaavrliewlkng 29

Search completed: Mon Oct 4 15:23:33 1999

Job time : 14 secs.

Tue Oct 5 09:37:50 1999



Release 3.1A John F. Collins, Biocomputing Research Unit.

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MPSrch\_pp protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:28:18 1999; MaxPar time 4.70 Seconds  
140.296 Million cell updates/sec

cular output not generated.

### Claim 84

Title: >MOHAM-312-CLAIM84.PEP

Description: (1-31) from moham312177.pep

Perfect Score: 220

Sequence: 1 diskqmeeaavrlfiewlkngppssgappps 31

Scoring table:

PAM 150

Gap 11

Searched: 170751 seqs., 21266608 residues

Post-processing: Minimum Match 0%  
Listing first 45 summaries

Database:

a-geneseq35  
1:part1 2:part2 3:part3 4:part4 5:parts 6:part6 7:part7  
8:part8 9:part9 10:part10 11:part11 12:part12 13:part13  
14:part14 15:part15 16:part16 17:part17 18:part18  
19:part19 20:part20 21:part21 22:part22 23:part23  
24:part24 25:part25 26:part26 27:part27 28:part28  
29:part29 30:part30 31:part31 32:part32 33:part33  
34:part34 35:part35 36:part36 37:part37 38:part38  
39:part39

Statistics: Mean 24.023; Variance 96.248; scale 0.250  
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

### SUMMARIES

Result No.	Score	Query	Match	Length	DB ID	Description	Pred. No.	Best Local Similarity	Score	Length
1	220	100.0	31 14 R80547	1	Heloderma suspectum e	1.10e-12	31	W61769	100.0%	31
2	-	100.0	39 39 W61769	1	Exendin-3, for use in	1.10e-12		standard; peptide;	39 AA.	
3	220	100.0	39 39 W61770	1	Exendin-4, for use in	1.10e-12				
4	220	100.0	39 30 W47608	1	Gila monster exendin-4	1.10e-12				
5	220	100.0	39 14 R80545	1	Heloderma horridum ex	1.10e-12				
6	220	100.0	39 14 R80546	1	Heloderma suspectum e	1.10e-12				
7	220	100.0	39 30 W47609	1	Gila monster exendin-	1.10e-12				
8	220	100.0	87 35 W70288	1	Heloderma suspectum P	1.10e-12				
9	195	88.6	39 39 W61773	1	Exendin-4	3.12e-10				
10	173	78.6	31 14 R80543	1	Leu(14), Pro(25)-exen-	4.22e-08				
11	165	75.0	30 39 W61771	1	Exendin-4 (1-30)	2.47e-07				
12	165	75.0	31 14 R80544	1	Heloderma suspectum e	2.47e-07				
13	158	71.8	30 29 W39368	1	Exendin-3, for use in	1.15e-06				
14	158	71.8	30 29 W39301	1	H. horridum exendin-3	1.15e-06				
15	158	71.8	30 29 W39302	1	H. horridum exendin-4	1.15e-06				
16	155	69.5	30 29 W39309	1	H. horridum exendin-4	3.42e-06				

RESULT	1	Match	Score	Length	31;
ID	R80547	standard; peptide;	31 AA.		
AC	R80547;				
DT	27-FEB-1996	(first entry)			
DE	Heloderma suspectum exendin-4 residues 9-39	(Extendin-4 (9-39))			
KW	Exendin-4; residues 9-39; Exendin-4 (9-39);				
OX	Insulinotrophic Peptides; inhibitor.				
OS	Heloderma suspectum.				
PN	US5124286-A.				
PD	13-JUN-1995.				
PF	24-MAY-1993; 066480.				
PR	24-MAY-1993; US-066480.				
PA	(ENGJ/)				
PI	Eng J;				
DR	95-262627/34.				
PT	Stimulating/inhibiting insulin release with exendin polypeptide(s) -				
FT	for treating diabetes mellitus and preventing hyperglycaemia.				
CC	Claim 7; Column 13:14; 17PP; English.				
SQ	R80547 is the Heloderma suspectum exendin-4 inhibitor.				
	CC is an insulinotrophic peptide activity inhibitor.				
	SQ Sequence 31 AA;				

RESULT	2	Match	Score	Length	31;
ID	W61769	standard; peptide;	39 AA.		
AC	W61769;				
DT	29-MAR-1999	(first entry)			
DE	Exendin-3, for use in treating disorders related to food intake;				
KW	Exendin; obesity; type II diabetes; eating disorders; cardiac disease;				
KW	insulin resistance syndrome; elevated plasma glucose level; agonist.				
OS	Heloderma horridum.				
PN	WO930231-A1.				

PD 16-JUL-1998; Score 100.0%; Best Local Similarity 100.0%; Matches 31; Query 1 dislkqmeearvifiewlkngppsgapps 31

PR 07-JAN-1997; US-00449.

PR 14-NOV-1997; US-066029.

PR 07-JAN-1997; US-034905.

PR 08-JUG-1997; US-05504.

PR 14-NOV-1997; US-065442.

PA (AMYL-) AMYLIN PHARM INC.

PI Beeley NRA, Bhavas S, Prickett KS;

DR WPI: 98-39896/34.

PT Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, eating disorders and insulin resistance.

PT Claims 16, 24; Page 8; 214pp; English.

PS The invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer lasting action (still effective after 6 hours in a mouse model). The present sequence is that of exendin-3 which is one of the preferred compounds for use in the method.

SQ Sequence 39 AA;

Query Match 100.0%; Score 220; DB 39; Length 39;  
Best Local Similarity 100.0%; Pred. No. 1.10e-12; Mismatches 0; Indels 0; Gaps 0;

DB 9 dislkqmeearvifiewlkngppsgapps 39  
1 dislkqmeearvifiewlkngppsgapps 31

Qy 1 dislkqmeearvifiewlkngppsgapps 31

RESULT 3 ID W61770 standard; peptide; 39 AA.  
>2 W61770; 29-MAR-1999 (first entry)

DT 08-AUG-1997; US-055042.

DE Exendin-4, for use in treating disorders related to food intake, Exendin; Obesity; type II diabetes; eating disorders; cardiac disease; insulin resistance syndrome; elevated plasma glucose level; agonist. Heloderma suspectum.

OS WO9830231-A1.

PR 16-JUL-1998; US-00449.

PT 07-JAN-1997; US-056029.

PT 07-JUN-1997; US-034905.

PT 08-AUG-1997; US-05504.

PT 14-NOV-1997; US-065442.

PA (AMYL-) AMYLIN PHARM INC.

PI Beeley NRA, Bhavas S, Prickett KS;

DR WPI: 98-398796/34.

PT Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, eating disorders and insulin resistance.

PT Claims 17, 25; Page 8; 214pp; English.

PS The invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer-lasting action (still effective after 6 hours in a mouse model). The present sequence is that of exendin-4 which is one of the preferred compounds for use in the method.

SQ Sequence 39 AA;

Query Match 100.0%; Score 220; DB 39; Length 39;  
Best Local Similarity 100.0%; Pred. No. 1.10e-12; Mismatches 0; Indels 0; Gaps 0;

DB .9 dislkqmeearvifiewlkngppsgapps 39  
1 dislkqmeearvifiewlkngppsgapps 31

Qy 1 dislkqmeearvifiewlkngppsgapps 31

RESULT 5 ID R8045 standard; peptide; 39 AA.  
>2 R8045; 27-FEB-1996 (first entry)

DE Heloderma horridum exendin-3.

AC Exendin-3; diabetes mellitus; hyperglycaemia; insulinotropic peptide. Heloderma horridum.

OS US5424286-A.

PR 13-JUN-1995.

PT 24-MAY-1993; 066480.

PR 24-MAY-1993; US-066480.

PA (ENG/ ) ENG J.

PI Eng J;

DR WPI: 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) - for treating diabetes mellitus and preventing hyperglycaemia.

Claim 5; Columns 13-14; 17pp; English.  
 AC R90546 is Heloderma horridum exendin 3. It is an insulinotrophic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention of hyperglycaemia. It normalises hyperglycaemia through glucose-dependent and insulin-(in)dependent mechanisms.

Sequence 39 AA;

Query Match 100.0%; Score 220; DB 14; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 1.10e-12;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 9 diskqmeearvlifewlkngpgssgappps 39  
 Qy 1 diskqmeearvlifewlkngpgssgappps 31

RESULT 6  
 ID R80546 standard; peptide; 39 AA.  
 AC R80546.  
 DC 27-FEB-1996 (first entry)

Heloderma suspectum exendin-4.  
 Exendin-4: diabetes mellitus; hyperglycaemia; insulinotropic peptide.  
 US Heloderma suspectum.

PN R90546.  
 PD 13-JUN-1995.  
 PF 24-MAY-1993; 066480.  
 PA (ENGL.) ENG J.

PI Eng J;  
 DR 95-262627/34.  
 PT Stimulating/inhibiting insulin release with exendin polypeptide(s) - for treating diabetes mellitus and preventing hyperglycaemia.

PT Claim 6; Columns 13-14; 17pp;  
 PS R90546 is Heloderma suspectum exendin-4. It is an insulinotrophic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention of hyperglycaemia. It normalises hyperglycaemia through glucose-dependent and insulin-(in)dependent mechanisms.

Sequence 39 AA;

Query Match 100.0%; Score 220; DB 14; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 1.10e-12;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 9 diskqmeearvlifewlkngpgssgappps 39  
 Qy 1 diskqmeearvlifewlkngpgssgappps 31

SURT 7  
 ID W47609 standard; peptide; 39 AA.  
 AC W47609.  
 DC 03-JUL-1998 (first entry)

DE Gila monster exendin-4.

KW Exendin agonist; gastric motility; gastric emptying; treatment; spasm; postprandial dumping syndrome; postprandial hyparglycaemia; obesity; Gila monster venom; exendin-4.

OS Heloderma suspectum.  
 EH Key Location/Qualifiers  
 FT Modified\_site 39  
 FT /note= "amidated"

PN W09805351-A1.  
 PD 12-FEB-1998.

PF 08-AUG-1996; 014199.  
 PR 08-AUG-1996; US-694954.

PA (AMYL) AMYLIN PHARM INC.  
 PI Beeley NRA, Gedlin B, Prickett KS, Young AA;

DR 98-14351/13.  
 PT Regulating gastrointestinal motility using exendins or their agonists - for treating spasm, diabetic postprandial hyparglycaemia, impaired glucose tolerance etc., also in diagnostic investigations

PS Claims 20 and 21; Fig 1; 70pp; English.  
 CC W47549 describes a generic exendin agonist, provided that it does have the formula of either exendin 3 (W47608) or exendin-4 (W47609).  
 CC Exendin agonists, which reduce gastric motility and delay gastric emptying, can be used to treat spasm (where associated with acute diverticulitis or disorders of the biliary tract or sphincter of Oddi), postprandial dumping syndrome and hyperglycaemia (particularly associated with type 2 diabetes); type 1 diabetes, impaired glucose tolerance, toxin ingestion (an exendin agonist is administered to prevent stomach contents passing into the intestines, then the stomach pumped) and obesity. They can also be administered to subjects undergoing gastrointestinal diagnostic investigation, particularly radiological or by magnetic resonance imaging.  
 CC Exendins, components of Gila monster venom, have some sequence similarity to glucagon-like Peptides (GLP). They are GLP agonists and have been suggested (US544286) for treatment of diabetes and prevention of hyperglycaemia.  
 SQ Sequence 39 AA;

Query Match 100.0%; Score 220; DB 30; Length 39;  
 Best Local Similarity 100.0%; Prod. No. 1.10e-12;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 9 diskqmeearvlifewlkngpgssgappps 39  
 Qy 1 diskqmeearvlifewlkngpgssgappps 31

RESULT 8  
 ID W70288 standard; Protein; 87 AA.

AC W70288;

DC 06-NOV-1998 (first entry)

DE Heloderma suspectum proexendin; exendin N-terminal peptide; ENTP; Heloderma suspectum proexendin; exendin N-terminal peptide; exendin 4 peptide; exendin 3 gene; Heloderma horridum; metabolic disease; drug screening; endocrine tumour; organ failure; cell metabolism; diabetes; reptilian venom peptide.

OS Heloderma suspectum.

FH Location/Qualifiers

Key 1..23  
 FT /note= "Signal peptide"  
 FT 1..47  
 FT /note= "ENTP"

Peptide 48..87

FT /note= "Exendin 4"

FT 46..47  
 FT /note= "Dipeptidyl peptidase cleavage site"

PN W09835033-A1.

PD 13-AUG-1998.

PF 04-FEB-1998; CA0071.

PR 07-FEB-1997; GB-002582.

PR 05-FEB-1997; US-037412.

PA (ONSO) 1149336 ONTARIO INC.

PI Drucker DJ;

DR 98-147230/38.

DR N-PSDB; V33162.

PT New nucleic acid encoding proexendin - used to diagnose and treat, e.g. endocrine tumours, also to treat poisoning by reptile venom

PT Claim 3; Fig 2; 26pp; English.

CC The Heloderma suspectum proexendin peptide is encoded by its cDNA which was isolated from a H. suspectum salivary gland cDNA library.

CC The proexendin protein comprises of a novel exendin N-terminal peptide (ENTP) linked to the N-terminus of the exendin 4 peptide by a consensus dipeptidyl peptidase cleavage site. The proexendin cDNA can be used to clone or identify related sequences (e.g. the exendin 3 gene of Heloderma horridum, mutant alleles and proexendin gene regulatory defects associated with metabolic disease) and species homologues (e.g. for developing animal models for drug screening).

CC The proexendin peptide can be used to raise antibodies. Anti-proexendin antibodies are claimed to be useful for diagnosing conditions associated with altered levels of proexendin (e.g. endocrine tumours and organ

CC failure), for identifying other regulators of cell metabolism, in drug screens and for treating metabolic diseases (e.g. diabetes) and for neutralising, or detecting, reptilian venom peptides.

CC Sequence 87 AA;

Query Match ID W61773; Score 100.0%; DB 35; Length 87; Best Local Similarity 100.0%; Pred. No. 1.10e-12; Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Dh 56 dliskqmeearvliefwklnggppsgappps 86  
|||||:|||||:|||||:|||||:|||||:|||||:|||||:  
1 dliskqmeearvliefwklnggppsgappps 31

Qy 9

W61773 standard; peptide: 39 AA.

KW Exendin, obesity; type II diabetes; eating disorders; cardiac disease; OS Heloderma suspectum.

US Synthetic.

EH Key Location/Qualifiers 39

FT Modified\_site 39

/note= "the C-terminal is in amide form"

PN W0930231-A1.

PD 16-JUL-1998.

PP -JAN-1998; US00449.

PR 14-NOV-1997; US-066029.

PR 07-JAN-1997; US-034005.

PR 08-AUG-1997; US-055404.

PR 14-NOV-1997; US-065442.

PA (AMYL-) AMYLIN PHARM INC.

PI Beeley NRA, Bhavas S, Prickett KS;

DR 98-39796/34.

PT Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, eating disorders and insulin resistance.

PT Claims 18, 26; Page 12; 214PP; English.

PS The invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer-lasting action (still effective after 6 hours in a mouse model). The present sequence is that of an exendin-4 variant which is one of the preferred compounds for use in the method.

CC Sequence 39 AA;

Query Match ID R80543; Score 195; DB 39; Length 39; Best Local Similarity 93.5%; Pred. No. 3.12e-10; Matches 29; Conservative 1; Mismatches 1; Indels 0; Gaps 0;

Dh 9 dliskqmeearvliefwklnggppsgappps 39  
|||||:|||||:|||||:|||||:|||||:  
1 dliskqmeearvliefwklnggppsgappps 31

Qy 10

PA (ENGL/) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptides - for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 1; Columns 13-14; 17PP; English.

CC R80543 is the Heloderma suspectum exendin-4 residues 1-31. It is an insulinotropic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention of hyperglycaemia. It normalises hyperglycaemia through glucose-dependent and insulin-(in)dependent mechanisms.

SQ Sequence 31 AA;

Query Match ID R80543; Score 173; DB 14; Length 31; Best Local Similarity 100.0%; Pred. No. 4.22e-08; Matches 23; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 9 dliskqmeearvliefwklnggpp 31  
|||||:|||||:|||||:  
Qy 1 dliskqmeearvliefwklnggpp 23

RESULT 11

ID W61771 standard; peptide: 30 AA.

AC W61771;

DT 29-MAR-1999 (first entry)

DE Exendin-4 (1-30) for use in treating disorders related to food intake.

KW obesity; type II diabetes; eating disorders; cardiac disease; Heloderma suspectum.

OS

FA Key Location/Qualifiers Modified\_site 30

FT /note= "optionally the C-terminal is in amide form"

PN W0930231-A1.

PD 16-JUL-1998.

PF 07-JAN-1998; US00449.

PR 14-NOV-1997; US-066029.

PR 07-JAN-1997; US-034005.

PR 08-AUG-1997; US-055442.

PA (AMYL-) AMYLIN PHARM INC.

PI Beeley NRA, Bhavas S, Prickett KS;

DR 98-398796/34.

PT Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, eating disorders and insulin resistance.

PT Claims 18, 26; Page 11; 214PP; English.

PS The invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer-lasting action (still effective after 6 hours in a mouse model). The present sequence is that of exendin-4 (1-30) or its amide which is one of the preferred compounds for use in the method.

CC Sequence 30 AA;

Query Match ID R80544; Score 165; DB 39; Length 30; Best Local Similarity 100.0%; Pred. No. 2.47e-07; Matches 22; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 9 dliskqmeearvliefwklngg 30  
|||||:|||||:  
Qy 1 dliskqmeearvliefwklngg 22

RESULT 12

ID R80544 standard; peptide: 31 AA.

AC R80544;

DT 27-FEB-1996 (first entry)

DE Heloderma suspectum exendin-4 residues 1-31 (Exendin-4(1-31)).

KW Exendin-4; residues 1-31; Exendin-4(1-31); diabetes mellitus;

KW hyperglycaemia; insulinotropic peptide.

OS Heloderma suspectum.

US5124286 A.

PN 13-JUN-1995.

PD 24-MAY-1993; 066480.

PF 24-MAY-1993; US-066480.

PR



horridum. This peptide and its salts, esters and derivatives can be used to treat diabetes mellitus. They stimulate biosynthesis and secretion of insulin, but have the opposite effect on glucagon, and independent of this activity can increase peripheral glucose utilisation. Exendin-3 and exendin-4 are only active when blood sugar levels are high, so they will not induce hypoglycaemia. Compared with glucagon-like Peptide 1 (GLP1) and the known exendins, they are more active (effective at lower doses), more stable to degradation and metabolism and have a longer lasting effect. Truncated forms of this peptide can be made more economically than full length versions.

Sequence 30 AA:

```
Query Match 71.8%; Score 158; DB 29; Length 30;
Best Local Similarity 100.0%; Pred. No. 1.15e-06;
Matches 21; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
9 dliskmeeearvlfielwkg 29
|:|||||:|||||:|||||:|||||:|
1 dliskmeeearvlfielwkg 21
```

Search completed: Mon Oct 4 15:28:38 1999  
 Job time : 20 secs.



#journal J. Biol. Chem. (1990) 265:20259-20262  
 #title Purification and structure of exendin-3, a new pancreatic  
 secretagogue isolated from *Heloderma horridum* venom.  
 #cross-references MUID:90223994  
 #accession E3746  
 #molecule\_type protein  
 #residues 1-39 #label ENG  
 COMMENT Exendins are venom components that are thought to bind to receptors  
 for vasoactive intestinal peptide and/or secretin on pancreatic  
 acinar cells and to activate adenylylate cyclase, resulting in  
 secretion of amylase.  
 CLASSIFICATION #superfamily glucagon  
 #modified carboxyl end; duplication; secretagogue; venom  
 KEYWORDS #length 39 #molecular-weight 4204 #checksum 9551  
 #experimental  
 #Query Match Score 220; DB 1; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 2.54e-27;  
 Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;  
 Db 9 DLSKQMEEAVERLFIWKLNGKPSSGAPPS 39  
 QY 1 diskqmeeaavrliwlngkpssgappps 31

RESULT 3  
 ENTRY S44472 #type complete  
 TITLE glucagon G2 - North American paddlefish (*Polyodon spathula*)  
 ORGANISM #formal\_name Polyodon spathula  
 DATE 19-Mar-1997 #sequence\_revision 12-Dec-1997 #text\_change  
 ACCESSIONS S44472  
 REFERENCE S44467  
 #authors Nguyen, T.M.; Monnsen, T.P.; Mims, S.M.; Conlon, J.M.  
 Biochem. J. (1994) 300:339-345.  
 #title Characterization of insulin and proglucagon-derived peptides  
 from a phylogenetically ancient fish, the paddlefish  
 (*Polyodon spathula*).  
 #cross-references S44472  
 #molecule\_type protein  
 #residues 1-31 #label NGU  
 #note the sequence from Fig. 3 is inconsistent with that from  
 Fig. 5 in having 29-Glu

SIFICATION #superfamily glucagon  
 #DBS carbohydrate metabolism; duplication; hormone; pancreas  
 #LITERATURE 1-31  
 #SUMMARY #product glucagon G2 #status predicted #label GCN  
 #length 31 #molecular-weight 3682 #checksum 7826

Query Match Score 91; DB 2; Length 31;  
 Best Local Similarity 57.1%; Pred. No. 8.43e-03;  
 Matches 12; Conservative 4; Mismatches 5; Indels 0; Gaps 0;  
 Db 9 DYSKYLEEKSAKEFWLKNG 29  
 QY 1 diskqmeeaavrliwlng 21

RESULT 4  
 ENTRY ZLYNSB #type complete  
 TITLE genome polyprotein - rabies virus (strain SAD B19)  
 ALTERNATE\_NAMES L protein  
 CONTAINS RNA-directed RNA polymerase (EC 2.7.7.48)  
 ORGANISM #formal\_name Rabies virus  
 DATE 30-Jun-1991 #sequence\_revision 30-Jun-1991 #text\_change  
 29-May-1998

ACCESSIONS A22478  
 REFERENCE A22478  
 #authors Tordo, N.; Poch, O.; Ermine, A.; Keith, G.; Rougeon, F.  
 #journal Proc. Natl. Acad. Sci. U.S.A. (1986) 83:3914-3918  
 #title Completion of the rabies virus genome sequence determination:  
 highly conserved domains among the L (polymerase) proteins  
 of unsegmented negative-strand RNA viruses.

#cross-references MUID:88306248  
 #accession A22478  
 #molecule\_type genomic RNA  
 #residues 1-142 #label TOR  
 #cross-references GB:M13215; GB:M21634; PID:9333590  
 REFERENCE A94100  
 #authors Tordo, N.; Poch, O.; Ermine, A.; Keith, G.; Rougeon, F.  
 #journal Proc. Natl. Acad. Sci. U.S.A. (1986) 83:3914-3918  
 #title Walking along the rabies genome: is the large G-L intergenic  
 region a remnant gene?

#cross-references MUID:86233343  
 #accession E22887  
 #molecule\_type DNA  
 #residues 1-28 #label T02

GENETICS  
 #gene L  
 #classification #superfamily rhabdovirus L protein  
 #KEYWORDS nucleotidyltransferase; RNA binding; RNA biosynthesis;  
 #transmembrane protein

FEATURE  
 543-562 #region RNA binding #status predicted #label TN2  
 1995-1982 #domain transmembrane #status predicted #label TN2  
 #residues 1-2142 #molecular-weight 244484 #checksum 433

SUMMARY #Query Match Score 88; DB 1; Length 2142;  
 Best Local Similarity 42.9%; Pred. No. 2.53e-02;  
 Matches 9; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

Db 37 NUNSPPLIEDPARMLJEWLKNG 57  
 QY 1 diskqmeeaavrliwlng 21

ACCESSIONS E34746  
 REFERENCE A34746  
 #authors Conzelmann, K.K.; Cox, J.H.; Schneider, L.G.; Thiel, H.J.  
 #journal Virology (1990) 175:485-499  
 #title Molecular cloning and complete nucleotide sequence of the



bulldog (Rana catesbeiana). Amino acid sequences of pancreatic polypeptide, oxyntomodulin, and two glucagon-like peptides.

#cross-references MUID:88257102

#accession B28091

#molecule\_type protein

#residues 1-36 #label P02

#accession C28091

#molecule\_type protein

#residues 1-36 #label P02

#accession D28091

#molecule\_type protein

#residues 69-101 #label P03

CLASSIFICATION #superfamily glucagon  
KEYWORDS carbohydrate metabolism; duplication; hormone; pancreas  
FEATURE 1-36

#product glucagon-36 (oxyntomodulin) #status experimental

experimental #label G36\#product glucagon #status predicted #label GCN\#product glucagon-like peptide 1 #status experimental

#label GL1\#product glucagon-like peptide 2 #status experimental

#label GL2

SUMMARY #length 101 #checksum 9108

Query Match Score 80; DB 1; Length 101;  
Best Local Similarity 43.5%; Pred. No. 4.29e-01; Indels 0; Gaps 0;

Matches 10; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

Db 45 DMSSYLEEAKKEFVWLLKGRP 67

Qy | :| :|| :| :|| :|  
1 diskqmeearvrlfiewlkgrg 23

RESULT 11 B61125 #type complete

glucagon like peptide - American eel

#formal\_name Anguilla rostrata #common\_name American eel

10-Mar-1994 \*sequence\_revision 10-Mar-1994 #text\_change

21-Nov-1997

B61125

ACCESSIONS A61125

REFERENCE Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.  
Gen. Comp. Endocrinol. (1991) 82:23-32

TITLE The primary structure of glucagon-like peptide but not insulin has been conserved between the American eel, Anguilla rostrata and the European eel, Anguilla anguilla.

#cross-references MUID:91340068

#accession B61125

#molecule\_type protein

#residues 1-30 #label CON

CLASSIFICATION #superfamily glucagon  
KEYWORDS amidated carboxyl end; duplication

FEATURE 1-30

#product glucagon-like peptide #status experimental

#label GLP\#modified\_site amidated carboxyl end (Arg) #status Predicted

#length 30 #molecular-weight 3376 #checksum 6092

SUMMARY #length 30 #checksum 6092

Query Match Score 77; DB 2; Length 30;  
Best Local Similarity 38.1%; Pred. No. 1.19e+00; Indels 0; Gaps 0;

Matches 8; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

Db 9 DVSSYIQLDQAAKKEFVSWLKTG 29

Qy | :| :|| :| :|| :|  
1 diskqmeearvrlfiewlkng 21

RESULT 13 151093 #type fragment

glucagon - chinook salmon (fragment)

#formal\_name Oncorhynchus tschawytscha #common\_name chinook salmon

ORGANISM

DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change

21-Nov-1997

Accession 151093

REF ID: A55895

#authors Irwin, D.M.; Wong, J.  
#journal Mol. Endocrinol. (1995) 9:267-277

#title Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.

#cross-references MUID:95295739

#accession 151093

#status Preliminary; translated from GB/EMBL/DBJ

#molecule\_type RNA

#residues 1-66 #label IRW

CLASSIFICATION #superfamily glucagon

KEYWORDS duplication

SUMMARY #length 66 #checksum 1440

Query Match Score 77; DB 2; Length 66;  
Best Local Similarity 38.1%; Pred. No. 1.19e+00; Indels 5; Mismatches 8; Indels 0; Gaps 0;

Matches 8; Conservative 7; Mismatches 6; Indels 5; Gaps 0;

Db 41 DVSTYIQLDQAAKDFVSMKSG 61

Qy | :| :|| :| :|| :|  
1 diskqmeearvrlfiewlkng 21

RESULT 14 151058 #type complete

glucagon I Precursor - rainbow trout

#formal\_name Oncorhynchus mykiss #common\_name rainbow trout

ORGANISM

DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change

21-Nov-1997

Accession 151058

REF ID: A55895

#authors Irwin, D.M.; Wong, J.  
#journal Mol. Endocrinol. (1995) 9:267-277

#title Chinook salmon proglucagon: sequence and expression of the gene

ORGANISM

DATE 151058; 151299; 151056; 151037; 151300

#cross-references MUID:91340068

#accession C61125

#molecule\_type protein

#residues 1-30 #label CON

CLASSIFICATION #superfamily glucagon  
KEYWORDS amidated carboxyl end; duplication

FEATURE 1-30

#product glucagon-like peptide #status experimental

#label GLP\#modified\_site amidated carboxyl end (Arg) #status Predicted

#length 30 #molecular-weight 3376 #checksum 6092

SUMMARY #length 30 #checksum 6092

Query Match Score 77; DB 2; Length 30;  
Best Local Similarity 38.1%; Pred. No. 1.19e+00; Indels 0; Gaps 0;

Matches 8; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

Db 9 DVSSYIQLDQAAKKEFVSWLKTG 29

Qy | :| :|| :| :|| :|  
1 diskqmeearvrlfiewlkng 21

RESULT 12 C61125 #type complete

glucagon-like peptide - European eel

#formal\_name Anguilla anguilla #common\_name European eel

ORGANISM

DATE 151058

#cross-references MUID:91340068

#accession C61125

#molecule\_type protein

#residues 1-30 #label CON

CLASSIFICATION #superfamily glucagon  
KEYWORDS amidated carboxyl end; duplication

FEATURE 1-30

#product glucagon-like peptide #status experimental

#label GLP\#modified\_site amidated carboxyl end (Arg) #status Predicted

#length 30 #molecular-weight 3376 #checksum 6092

SUMMARY #length 30 #checksum 6092

Query Match Score 77; DB 2; Length 30;  
Best Local Similarity 38.1%; Pred. No. 1.19e+00; Indels 0; Gaps 0;

Matches 8; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

```

#title Trout and chicken proglucagon: alternative splicing generates
#cross-references MUIP:95295739
#accession 151058
##status preliminary; translated from GB/EMBL/DDBJ
##molecule_type mRNA
##residues 1-178 ##label IRW
##cross-references EMBL:U19917; NID:9736364; PID:9736365; GB:S78475;
NID:999384; PID:999385

#accession 151299
##status preliminary; translated from GB/EMBL/DDBJ
##molecule_type mRNA
##residues 52-53,'X',55-123 ##label IR2
##cross-references GB:578473; NID:999382; PID:999383
#accession 151056
##status preliminary; translated from GB/EMBL/DDBJ
##cross-references EMBL:U19913; NID:9736360; PID:9736361

#accession 151037
##status preliminary; translated from GB/EMBL/DDBJ
##molecule_type DNA
##residues 'M',114-144 ##label IR4
##cross-references EMBL:U19919; NID:9736374; PID:9736377

#accession 151036
##status preliminary; translated from GB/EMBL/DDBJ
##molecule_type DNA
##residues 113-123 ##label IR5
##cross-references EMBL:U19918; NID:9736373; PID:9736376

GENETICS
#intron 123/2
CLASSIFICATION #superfamily glucagon
KEYWORDS duplication #molecular-weight 19998 #checksum 4464
#length 178 #molecular-weight 19998 #checksum 4464
SUMMARY
Query Match 35.0%; Score 77; DB 2; Length 178;
Best Local Similarity 38.1%; Pred. No. 1.19e+00;
Matches 8; Conservative 8; Mismatches 5; Indels 0; Gaps 0;
Db 98 DVSTYLDQAAKDFYSWLKG 118
Qy 1 diskqmeearvifiewlkg 21

#accession 151039
##status preliminary; translated from GB/EMBL/DDBJ
##molecule_type DNA
##residues 113-144 ##label IR2
##cross-references EMBL:U19916; NID:9736369; PID:9736372
#accession 151038
##status preliminary; translated from GB/EMBL/DDBJ
##molecule_type DNA
##residues 113-123 ##label IR3
##cross-references EMBL:U19915; NID:9736368; PID:9736371
GENETICS

```



OC SCLEROGLOSSA; ANGUIMORPHA; HELODERMATIDAE; HELODERMA.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA CHEN Y.-E.; DRUCKER D.-J.;  
 RL SUBMITTED (APR-1997) TO EMBL/GENBANK/DDJB DATA BANKS.  
 RN [2]  
 RP SEQUENCE OF 48-86.  
 RC TISSUE=VENOM;  
 RX MEDLINE; 9218391.  
 RA ENG J.; KLEINMAN W.A.; SINGH L.; SINGH G.; RAUFMAN J.-P.;  
 RT "Isolation and characterization of exendin-4, an exendin-3 analogue,  
 RT from Heloderma suspectum venom. Further evidence for an exendin  
 RT receptor on dispersed acini from guinea pig pancreas.";  
 RL J. BIOL. CHEM. 267:7402-7405(1992)  
 CC -!- FUNCTION: HAS A VIP/SECRETIN-LIKE BIOLOGICAL ACTIVITY. INTERACTS  
 CC WITH THE EXENDIN RECEPTOR.  
 CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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Query Match Score 88; DB 1; Length 2127;  
 Best Local Similarity 42.9%; Pred. No. 6.16e-03; Mismatches 6; Indels 0; Gaps 0;

Db 37 NLNSPLIEDPARMLEWLTG 57  
 :|: :|: |:||| |  
 Qy 1 dlskqmeearvrlfiewlkng 21

RESULT 4  
 ID RRPL\_RABVP STANDARD PRT; 2142 AA.  
 ID P11213; AC P11213; DT 01-JUL-1989 (REL. 11, CREATED)  
 DT 01-JAN-1990 (REL. 13, LAST SEQUENCE UPDATE)  
 DT 15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)  
 DB RNA POLYMERASE BETA SUBUNIT (EC 2.7.7.48) (LARGE STRUCTURAL PROTEIN)  
 DE (L PROTEIN).  
 GN OS RABIES VIRUS (STRAIN PASTEUR / PV).  
 OC VIRUSES; SSRNA NEGATIVE-STRAND VIRUSES; MONONEGAVIRALES;  
 OC RABDOVIRIDAE; LYSSAVIRUS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE: 88306748.  
 RA TORDO N.; POCH O.; ERMINNE A.; KEITH G.; ROUGEBON F.;  
 RT "Completion of the rabies virus genome sequence determination: highly  
 conserved domains among the L (polymerase) proteins of unsegmented  
 negative-strand RNA viruses.";  
 RL VIROLOGY 165:565-576(1988).  
 RN [2]  
 RP SEQUENCE OF 1-28 FROM N.A.  
 RX MEDLINE: 8623343.  
 RA TORDO N.; POCH O.; ERMINNE A.; KEITH G.; ROUGEBON F.;  
 RT "Walking along the rabies genome: is the large G-L intergenic region  
 a remnant gene?";  
 RT  
 RL PROC. NATL. ACAD. SCI. U.S.A. 83:3914-3918(1986).  
 CC -!- FUNCTION: THIS PROTEIN IS PROBABLY A COMPONENT OF THE ACTIVE  
 CC POLYMERASE. IT MAY FUNCTION IN RNA SYNTHESIS, CAPPING, AS WELL AS  
 CC METHYLATION OF CAPS, AND POLY(A) SYNTHESIS.  
 CC -!- SUBUNIT: THOUGHT TO FORM A TRANSCRIPTION COMPLEX WITH THE  
 CC NUCLEOCAPSID (N) PROTEIN.  
 CC -!- SIMILARITY: WITH THE L PROTEIN OF OTHER RHABDOVIRUSES AND  
 CC PARAMYXOVIRUSES.

LT 3  
 RRPL\_RABVS STANDARD PRT; 2127 AA.  
 AC P16289;  
 DT 01-AUG-1990 (REL. 15, CREATED)  
 DT 01-AUG-1990 (REL. 15, LAST SEQUENCE UPDATE)  
 DT 15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)  
 DE RNA POLYMERASE BETA SUBUNIT (EC 2.7.7.48) (LARGE STRUCTURAL PROTEIN)  
 DE (L PROTEIN).  
 GN OS RABIES VIRUS (STRAIN SAD B19).  
 OC VIRUSES; SSRNA NEGATIVE-STRAND VIRUSES; MONONEGAVIRALES;  
 OC RABDOVIRIDAE; LYSSAVIRUS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE; 9022394.  
 RA CONZELMANN K.-K.; COX J.H.; SCHNEIDER L.G.; THIEL H.-J.;  
 RT Molecular cloning and complete nucleotide sequence of the attenuated  
 RT rabies virus SAD B19.;  
 RL VIROLOGY 175:485-499(1990).  
 CC -!- FUNCTION: THIS PROTEIN IS PROBABLY A COMPONENT OF THE ACTIVE  
 CC POLYMERASE. IT MAY FUNCTION IN RNA SYNTHESIS, CAPPING, AS WELL AS  
 CC METHYLATION OF CAPS, AND POLY(A) SYNTHESIS.  
 CC -!- SUBUNIT: THOUGHT TO FORM A TRANSCRIPTION COMPLEX WITH THE  
 CC NUCLEOCAPSID (N) PROTEIN.  
 CC -!- SIMILARITY: WITH THE L PROTEIN OF OTHER RHABDOVIRUSES AND  
 CC PARAMYXOVIRUSES.

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DR EMBL; M13215; G33390; -.  
 DR PIR; A14671; G492973; -.  
 DR PIR; A29248; ZLNPV.  
 DR PIR; E24887; E24887.  
 KW TRANSFERASE; RNA-DIRECTED RNA POLYMERASE.  
 SQ SEQUENCE; 2142 AA; 244485 MW; D8D1FB8F CRC32;

Query Match Score 88; DB 1; Length 2142;  
 Best Local Similarity 42.9%; Pred. No. 6.16e-03;

Matches 9; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

RP SEQUENCE.  
RC TISSUE=PANCREAS;  
RX MEDLINE; 89257102;  
RA POLLICK H.G., HAMILTON J.W., ROUSE J.B., EBNER K.E., RAWITCH A.B.;  
RT "Isolation of Peptide hormones from the pancreas of the bullfrog  
(Rana catesbeiana). Amino acid sequences of pancreatic polypeptide,  
oxyntomodulin, and two glucagon-like peptides.";  
RU J. BIOL. CHEM. 263:9746-9751(1988);  
CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES  
CC THE BLOOD SUGAR LEVEL.  
CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
CC IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
CC -!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH OTHER SPECIES  
SEQUENCES.  
CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
PIR; B28091; GCGGB.  
DR PROSITE; PS00260; GLUCAGON; 3.  
PBM; P00123; hormone2; 3.  
DR HSSP; P01274; IGCN.  
RN [1]  
RP SEQUENCE.  
RC TISSUE=PANCREAS;  
RX MEDLINE; 87156787;  
RA HOSEIN N.M., MAHRENHOLZ A.M., ANDREWS P.C., GURD R.S.;  
RT "Biological activities of catfish glucagon and glucagon-like  
peptide.";  
RL BIOCHEM. BIOPHYS. RES. COMMUN. 143:87-92(1987).  
RN [2]  
RP SEQUENCE.  
RC TISSUE=PANCREAS;  
RX MEDLINE; 85157536;  
RA ANDREWS P.C., RONNER P.;  
RT "Isolation and structures of glucagon and glucagon-like peptide from  
catfish pancreas";  
J. BIOL. CHEM. 260:3910-3914(1985).  
CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.  
CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
CC IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
CC -!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN  
GOOSEFISH SEQUENCES.  
CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
DR PIR; A05166; GCDC.  
DR PROSITE; PS00260; GLUCAGON; 2.  
DR PFAM; P00123; hormone2; 2.  
DR HSSP; P01274; IGCN.  
KW GLUCAGON FAMILY; HORMONE.  
FT NON-TER 1 1  
FT PEPTIDE 1 29  
ET PEPTIDE 38 71  
ET CONFLICT 53 53  
FT NON-TER 71 71  
SEQUENCE 71 AA; 8173 MW; C49ED93A CRC32;  
Score 83; DB 1; Length 71;  
Best Local Similarity 37.7%; Pred. No. 4.33e-02;  
Matches 11; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

Query Match Score 83; DB 1; Length 71;  
Best Local Similarity 37.7%; Pred. No. 4.33e-02;  
Matches 11; Conservative 6; Mismatches 6; Indels 0; Gaps 0;

RESULT 6  
ID GLUC\_RANCA STANDARD; PRT; 103 AA.  
AC P15438; P15439; P15440;  
DT 01-APR-1990 (REL. 14; CREATED)  
DT 01-JUL-1993 (REL. 26; LAST SEQUENCE UPDATE)  
DT 01-JUL-1993 (REL. 26; LAST ANNOTATION UPDATE)  
DE GLUCAGON PRECURSOR (FRAGMENTS).  
OS EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; AMPHIBIA; BATRACHIA; ANURA;  
QC RANA CATESBEIANA (BULL FROG).  
OC NEOBATRACHIA; RANOIDEA; RANIDAE; RANINAE; RANA.  
RN

RP SEQUENCE.  
RC TISSUE=PANCREAS;  
RX MEDLINE; 91340068;  
RA CONNON J.-M., ANDREWS P.C., THIM L., MOON T.W.;  
RT "The primary structure of glucagon-like peptide but not insulin has  
been conserved between the American eel, Anguilla rostrata and the  
European eel, Anguilla anguilla.";  
RT GEN COMP ENDOCRINOL. 82:23-32(1991);  
OS ANGUILLA ROSTRATA (AMERICAN EEL), AND  
OC EURYOPA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
OC TELEOSTEI; ANGUILLIFORMES; ANGUILLIDE; ANGUILLA.  
RN [1]  
RP SEQUENCE.  
RC TISSUE=PANCREAS;  
RX MEDLINE; 278EC37D CRC32;  
SQ SEQUENCE 30 AA; 3376 MW;

Query Match Score 77; DB 1; Length 30;  
Best Local Similarity 35.0%; Pred. No. 4.12e-01;  
Matches 8; Conservative 7; Mismatches 7; Indels 0; Gaps 0;

Db 46 DVSSYIQLQEAQAKDFITWLKGQP 68  
|:|::|:||:|||:|||:  
Qy 1 diskqmeearvifewlkngqp 23

Query Match Score 77; DB 1; Length 30;  
Best Local Similarity 38.1%; Pred. No. 4.12e-01;  
Matches 8; Conservative 7; Mismatches 7; Indels 0; Gaps 0;

Db 9 DVSSYIQLQEAQAKDFITWLKGQP 29  
|:|::|:||:|||:  
Qy 1 diskqmeearvifewlkng 21

-!- X-S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN GOOSEFISH SEQUENCES.

CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

CC DR PIR; S06339; GCGA.

CC DR PROSITE; PS01260; GLUCAGON; 2.

CC DR PEPTIDE; PF00133; IGGN.

CC DR HSSP; P01274; IGGN.

CC GLUCAGON FAMILY; HORMONE.

CC FT PEPTIDE 1 29.

CC FT PEPTIDE 1 36.

CC GLUCAGON-36 (OXINTOMODULIN).

CC GLUCAGON-LIKE PEPTIDE.

CC SQ SEQUENCE 78 AA; 890 MW; 509ED93 CRC32;

Query Match 34.5%; Score 76; DB 1; Length 78;

Best Local Similarity 38.1%; Pred. No. 5.93e-01;

Matches 8; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

Db 53 DVSSYILODQAKKEFKVWLKQG 73

QY :|: ::| :|: ||| | 1 dlskqmeeeavrlfiewlkng 21

Result 10

ID ACYP\_ECOLI STANDARD; PRT; 92 AA.

ID AC P75877; STANDARD;

AC P75877; CREATED)

DT 15-JUL-1998 (REL. 36, LAST SEQUENCE UPDATE)

DT 15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE)

DT 15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE)

DE PUTATIVE ACYLPHOSPHATASE (EC 3.6.1.7) (ACYLPHOSPHATE PHOSPHOHYDROLASE), GN YCCX.

OS ESCHERICHIA COLI.

OC BACTERIA; PROTEOBACTERIA; GAMMA SUBDIVISION; ENTEROBACTERIAEAE;

RN [1]

RP SEQUENCE FROM N.A.; RC STRAIN-K12 / MG1655;

DR MEDLINE; 97426617.

RA BLATTNER F.R., PLUNKETT G. III, BLOCH C.A., PERNA N.T., BURLAND V., RILEY M., COLLAPO-VIDES J., GLASNER J.D., RODE C.K., MAYHEW G.F., GREGOR J., DAVIS N.W., KIRKPATRICK H.A., GOEDEN M.A., ROSE D.J., RA MAU B., SHAO Y.; RT \*The complete genome sequence of Escherichia coli K-12.;"

RL SCIENCE 277:1453-1474(1997).

CC -!- CATALYTIC ACTIVITY: AN ACYLPHOSPHATE + H(2)O = A FATTY ACID ANION + ORTHOPHOSPHATE.

CC -!- SIMILARITY: HIGH, WITH VERTEBRATE ACYLPHOSPHATASES.

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CC DR EMBL; AE000199; G1787203; -

CC DR ECOPROT; EG13726; YCCX.

CC DR PROSITE; PS00150; ACYLPHOSPHATASE\_1; 1.

CC DR PROSITE; PS00151; ACYLPHOSPHATASE\_2; 1.

CC DR PF00708; Acylphosphatase; 1.

CC DR HSSP; P41500; 2ACY.

CC KW HYPOTHETICAL PROTEIN; HYDROLASE.

CC SQ SEQUENCE 92 AA; 10300 MW; 599AC0C CRC32;

Query Match 34.1%; Score 75; DB 1; Length 92;

Best Local Similarity 50.0%; Pred. No. 6.51e-01;

Matches 10; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

Db 51 EGGQVKLMWIKSGPGRPSA 70

QY :|: ::| :|: ||| | 7 eeeavrflfiewlkngpssg 26

Result 8

ID GLU2\_ORIENT STANDARD; PRT; 33 AA.

ID AC P81027; CREATED)

DT 01-NOV-1997 (REL. 35, LAST SEQUENCE UPDATE)

DT 01-NOV-1997 (REL. 35, LAST ANNOTATION UPDATE)

CC GLUCAGON II

CC OREOCHROMIS NILOTICUS (NILE TILAPIA) (TILAPIA NILOTICA); NEOPTERYGI;

CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGI; NEOPTERYGI;

CC LABRODEI; CICHLIDAE; TILAPIA.

CC SEQUENCE . . . . .

CC MEDLINE; 95384941.

CC NGUYEN T.M., WRIGHT J.R., JR., NIELSEN P.F., CONLON J.M., RÖCKMANN BODY OF THE TILAPIA: CHARACTERIZATION OF THE PANCREATIC HORMONES FROM THE BACULOVIRUS OF THE TILAPIA: IMPLICATIONS FOR ISLET XENOGRAFT STUDIES.;

CC COMP. BIOCHEM. PHYSIOL. 111C:33-44 (1995).

CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.

CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.

CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

CC PROSITE; PS00260; GLUCAGON; FALSE\_NEG.

CC PFM; PF00123; hormone2; 1.

CC HSSP; P01274; IGGN.

CC GLUCAGON FAMILY; HORMONE.

CC SEQUENCE 33 AA; 3731 MW; D0FD0808 CRC32;

Query Match 35.0%; Score 77; DB 1; Length 33;

Best Local Similarity 38.1%; Pred. No. 4.12e-01;

Matches 8; Conservative 7; Mismatches 6; Indels 0; Gaps 0;

Db 8 DVSSYILODQAKKEFKVWLKIG 28

QY :|: ::| :|: ||| | 1 dlskqmeeeavrlfiewlkng 21

Result 9

ID GLUC\_IEPSP STANDARD; PRT; 78 AA.

ID AC P09567; CREATED)

DT 01-MAR-1989 (REL. 10, LAST SEQUENCE UPDATE)

DT 01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)

DT 01-FEB-1994 (REL. 26, LAST ANNOTATION UPDATE)

CC GLUCAGON PRECURSOR (FRAGMENT).

CC LEPISTOTEUS SPATULA (ALLIGATOR GAR) (ATRACTOSPEUS SPATULA).

CC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGI; NEOPTERYGI;

CC SEMIOTONIFORMES; LEPTOSTRIDIA; LEPISTOSTEUS.

CC TISSUE-PANCREAS AND 45-78.

CC SEQUENCE OF 1-36 AND 45-78.

CC POLLOCK H.G., KIMMEL J.R., EBNER K.E., HAMILTON J.W., ROUSE J.B., LANCE V., RAWITCH A.B.;

CC "Isolation of alligator gar (Lepisosteus spatula) glucagon, oxyntomodulin, and glucagon-like peptide; amino acid sequences of GEN. COMP. ENDOCRINOL. 69:133-140(1988).

CC PRELIMINARY SEQUENCE OF 1-29.

CC TISSUE-PANCREAS.

CC MEDLINE; 88030594.

CC POLLOCK H.G., KIMMEL J.R., EBNER K.E., HAMILTON J.W., ROUSE J.B., EBNER K.E., LANCE V., RAWITCH A.B.;

CC "Isolation and structures of alligator gar (Lepisosteus spatula) insulin and pancreatic polypeptide.";

CC INSULIN AND PANCREATIC POLYPEPTIDE.

CC GEN. COMP. ENDOCRINOL. 67:375-382(1987).

CC THE BLOOD SUGAR LEVEL.

CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.

CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.

RESULT 11 ID GLUC\_CARAU STANDARD; PRT; 121 AA.

AC P79695; CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.

CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS.

CC -!- IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.

CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

CC

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CC

RP SEQUENCE FROM N.A.

RA YUEN T.T.H., MOK P.Y., CHOW B.K.C.; DR V00632; G64022; -.

RL SUBMITTED (FEB-1997) TO EMBL/GENBANK/DDJB DATA BANKS. DR J00933; G213353; -.

CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.

CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

CC

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CC

DR EMBL: U6528; G176277; -.

DR PROSITE: PS00260; GLUCAGON; 2.

DR PFAM: PF0123; hormone2; 2.

DR HSSP: P0174; IGCN.

KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.

FT SIGNAL 1 21 PEPTIDE 21 49 GRPP (GLICENTINE RELATED POLYPEPTIDE).

FT PEPTIDE 22 49 GLUCAGON II.

FT PEPTIDE 52 80 GLUCAGON-LIKE PEPTIDE II.

FT PEPTIDE 89 119 MW: DFB63061 CRC32;

SQ SEQUENCE 122 AA: 14171 MW: DFB63061 CRC32;

Query Match 34.1% Score 75; DB 1; Length 122; Best Local Similarity 38.1%; Pred. No. 8.51e 01; Matches 8; Mismatches 7; Indels 6; Gaps 0;

Db 97 DVSSXLIQDQAKDFVWSWLKG 117 QY 1 dlskqmeearvrlfiewlkng 21

RESULT 13 ID MGMT\_HUMAN STANDARD; PRT; 207 AA.

AC P16455;

AC 01-AUG-1990 (REL. 15, CREATED)

DT 01-AUG-1990 (REL. 15, LAST SEQUENCE UPDATE)

DT 01-JUN-1994 (REL. 29, LAST ANNOTATION UPDATE)

DE METHYLATED-DNA--PROTEIN-CYSTEINE METHYLTRANSFERASE (EC 2.1.1.63) <6-O-METHYLGUANINE-DNA METHYLTRANSFERASE>.

DE MGMT.

GN HOMO\_SAPIENS (HUMAN).

OC EUKARYOTA; METIZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA; PRIMATES; CATARRHINI; HOMINIDAE; HOMO.

RN [1]

FP SEQUENCE FROM N.A. AND SEQUENCE OF 1-8.

RX MEDLINE; 9013892.

RX TANO K., SHIOTA S., COLLIER J., FOOTE R.S., MITRA S.;

RT "Isolation and structural characterization of a cDNA clone encoding Escherichia coli and gene expression in human cells."

RT Escherichia coli and gene expression in human cells.";

RL PROC. NATL. ACAD. SCI. U.S.A. 87:686-690(1990).

RN [2]

RN SEQUENCE FROM N.A.

RX MEDLINE; 90264461.

RX RYDBERG B., SPURR N., KARRAN P.

RX "CDNA cloning and chromosomal assignment of the human 06-methylguanine-DNA methyltransferase. cDNA expression in Escherichia coli and gene expression in human cells."

RT J. BIOL. CHEM. 265:5563-5569(1990).

RN [3]

RP SEQUENCE FROM N.A.

RX MEDLINE; 90368638.

RX KOIKE G., MAKI H., TAKEYA H., HAYAKAWA H., SEKIGUCHI M.;

RT "Purification, structure, and biochemical properties of human O6-

RT methyl guanine-DNA methyltransferase."

RL J. BIOL. CHEM. 265:14754-14762(1990).

RN [4]

RP SEQUENCE FROM N.A.

RX MEDLINE; 90294292.

RA HAYAKAWA H., KOIKE G., SEKIUCHI M.;  
 RT "Expression and Cloning of complementary DNA for a human enzyme that  
 repairs O6-methylguanine in DNA.";  
 RL J. MOL. BIOL. 213:733-747(1990).  
 [5]  
 RN CHARACTERIZATION.  
 RP  
 RX MEDLINE; 94261426.  
 RA LIEM L.-K, LIM A., LI B.-F.L.;  
 RT Specificities of human, rat, and E. coli O6-methylguanine-DNA  
 methyltransferases towards the repair of O6-methyl and  
 O6-ethylguanine in DNA."  
 RT NUCLEIC ACIDS RES. 22:1613-1619(1994).  
 RL FUNCTION: REPAIR OF ALKYLATED GUANINE IN DNA BY STOICHIOMETRICALLY  
 TRANSFERRING THE ALKYL GROUP AT THE O-6 POSITION TO A CYSTEINE  
 RESIDUE IN THE ENZYME. THIS IS A SUICIDE REACTION: THE ENZYME IS  
 IRREVERSIBLY INACTIVATED.  
 CC !- CATALYTIC ACTIVITY: DNA (CONTAINING O6-METHYLGUANINE) + PROTEIN  
 L-CYSTEINE = DNA (WITHOUT O6-METHYLGUANINE) + PROTEIN S-METHYL-  
 L-CYSTEINE.  
 CC !- SIMILARITY: WITH SEGMENTS OF E. COLI ADA AND OCT METHYLTRANSFERASE  
 WHICH ENCOMPASS THE ALKYL-ACCEPTOR RESIDUES.  
 CC  
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 DR X54228; G34559; -.  
 DR EMBL; M2941; G307199; -.  
 DR EMBL; M31167; G181656; -.  
 DR EMBL; M60751; G187579; -.  
 DR PIR; A34889; XDHUMC.  
 DR MIM; 156559; -.  
 DR PROSITE; PS00374; M0MT; 1.  
 DR PFAM; PF01035; Methytrans; 1.  
 DR HSSP; P06334; ISFE.  
 KW DNA REPAIR; TRANSFERASE; METHYLTRANSFERASE.  
 FT ACT-SITE 145 145 ALKYL GROUP ACCEPTOR (BY SIMILARITY).  
 FT CONFFLICT 127 127 A -> T (IN REF. 2).  
 SQ SEQUENCE 207 AA; 21646 MW; 397ALC19 CRC32;  
 Query Match 34.1%; Score 75; DB 1; Length 207;  
 Best Local Similarity 53.3%; Pred. No. 8 51e-01;  
 Matches 8; Conservative 6; Mismatches 1; Indels 0; Gaps 0;  
 SEQUENCE 191 WLKGAGATSGSPFAG 205  
 ||| :||:||:||:||:||:  
 Qy 17 wlkn99pssgappps 31

RESULT 14  
 ID UT1\_HUMAN STANDARD; PRT; 389 AA.  
 AC Q13336;  
 DT 01-NOV-1997 (REL. 35, CREATED)  
 DT 15-DEC-1998 (REL. 37, LAST SEQUENCE UPDATE)  
 DT 15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)  
 LN UREA TRANSPORTER, ERYTHROCYTE.  
 LN SLC14A1 OR UT1 OR HUT1 OR UTE OR JK OR RACH1.  
 CS HOMO SAPiens (HUMAN).  
 CO FJXAROTC; METRAOA; CHORDATA; VERTEBRATA; MAMMALIA; EUOTHERIA;  
 CO PRIMATES; CATARRHINI; HOMINIDAE; HOMO;  
 RN [1]  
 RP SEQUENCE FROM N. A.  
 RC TISSUE-BONE MARROW;  
 RX MEDLINE; 95081111.  
 RA OLIVES B., NEAU P., BAILLY P., HEDIGER M.A., ROUSSELET G.,  
 RA CARTRON J.-P., RIPOCHE P.;  
 RT "Cloning and functional expression of a urea transporter from human  
 bone marrow cells.";  
 RT J. BIOL. CHEM. 269:31649-31652(1994).  
 RL

[2] SEQUENCE FROM N. A.  
 RP  
 RX MEDLINE; 96117053.  
 RA DAVEY S., BEACH D.;  
 RA "RACE2, a novel human gene that complements a fission yeast cell  
 cycle checkpoint mutation";  
 RL MOL. BIOL. CELL 6:1411-1421(1995).  
 RN  
 RP SEQUENCE FROM N. A., AND VARIANT JK(B).  
 RX MEDLINE; 97358573.  
 RA OLIVES B., MERRIMAN M., BAILLY P., BAIN S., BARNETT A., TODD T.,  
 RA CARTRON J.-P., MERRIMAN T.;  
 RT "The molecular basis of the Kidd blood group polymorphism and its lack  
 of association with type 1 diabetes susceptibility.";  
 RL HUM. GENET. 6:1017-1020(1997).  
 CC !- FUNCTION: SPECIALIZED LOW-AFFINITY UREA TRANSPORTER. MEDIATES UREA  
 TRANSPORT IN ERYTHROCYTES.  
 CC !- SUBCELLULAR LOCATION: INTEGRAL MEMBRANE PROTEIN.  
 CC !- TISSUE SPECIFICITY: ERYTHROCYTES.  
 CC !- POLYMORPHISM: SLC14A1 IS RESPONSIBLE FOR THE KIDD BLOOD GROUP  
 SYSTEM. THE MOLECULAR BASIS OF THE JK(A)/JK(B) BLOOD GROUP  
 ANTIGENS IS A SINGLE VARIATION IN POSITION 280: ASP-280  
 CORRESPONDS TO JK(A) AND ASN-280 TO JK(B).  
 CC  
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 CC  
 DR EMBL; L36121; ; NOT\_ANNOTATED\_CDS.  
 DR EMBL; U35735; G132222; -.  
 DR MIM; 111000; -.  
 KW TRANSPORT; TRANSMEMBRANE; GLYCOPROTEIN; BLOOD GROUP ANTIGEN;  
 KW POLYMORPHISM.  
 FT TRANSEM 53 73 POTENTIAL.  
 FT TRANSEM 78 98 POTENTIAL.  
 FT TRANSEM 116 136 POTENTIAL.  
 FT TRANSEM 143 163 POTENTIAL.  
 FT TRANSEM 173 193 POTENTIAL.  
 FT TRANSEM 243 263 POTENTIAL.  
 FT TRANSEM 281 301 POTENTIAL.  
 FT TRANSEM 310 330 POTENTIAL.  
 FT TRANSEM 333 353 POTENTIAL.  
 FT CARBOYD 211 211 POTENTIAL.  
 FT VARIANT 280 280 D -> N (IN JK(B)).  
 FT CONFLICT 44 44 E -> K (IN REF. 1).  
 FT CONFLICT 231 231 G -> GVG (IN REF. 1).  
 SQ SEQUENCE 389 AA; 42528 MW; 17DC7F5A CRC32;

Query Match 34.1%; Score 75; DB 1; Length 389;  
 Best Local Similarity 36.4%; Pred. No. 8.51e-01; Indels 1; Gaps 1;  
 Matches 8; Conservative 8; Mismatches 5; Mismatches 5; Indels 1; Gaps 1;

Db 44 ELANGOLDKKVYVLFIDWLRG 65  
 Dt :||:||:||:||:||:||:||:||:  
 Qy 1 disk9meeavr1-fiewlkng 21

RESULT 15  
 ID YBDN\_ECOLI STANDARD; PRT; 406 AA.  
 AC P77216;  
 DT 15-JUL-1998 (REL. 36, CREATED)  
 DT 15-JUL-1998 (REL. 36, LAST SEQUENCE UPDATE)  
 DT 15-JUL-1998 (REL. 36, LAST ANNOTATION UPDATE)  
 DE HYPOTHETICAL 47.8 KD PROTEIN IN CSTA-DBBG INTERGENIC REGION.  
 GN YBDN.  
 OS ESCHERICHIA COLI.  
 OC BACTERIA; PROTEOBACTERIA; GAMMA SUBDIVISION; ENTEROBACTERIAE;  
 OC ESCHERICHIA.  
 RN [1]

RP SEQUENCE FROM N.A.  
 RC STRAIN-K12 / MG1655;  
 RX MEDLINE; 9426617.  
 RA BLATTNER F.R., PLUNKETT G., III, BLOCH C.A., PERNIA N.T., BURLAND V.,  
 RA RILEY M., COLLADO-VIDES J., GLASNER J.D., RODE C.K., MAYHEW G.F.,  
 RA GREGOR J., DAVIS N.W., KIRKPATRICK H.A., GOEDEN M.A., ROSE D.J.,  
 RA MAU B., SHAO Y.;  
 RT "The complete genome sequence of Escherichia coli K-12.";  
 RL SCIENCE 277:1453-1474 (1997).  
 [2]  
 RN RP  
 RP SEQUENCE FROM N.A.  
 RA CHUNG E., ALLEN E., ARAUJO R., APARICIO A., DAVIS K., DUNCAN M.,  
 RA FEDERSPIEL N., HYMAN R., KALMAN S., KOMP C., KURDI O., LEW H., LIN D.,  
 RA NAMATH A., OEFNER P., ROBERTS D., SCHRAMM S., DAVIS R.W.;  
 RL SUBMITTED (JAN-1997) TO EMBL/GENBANK/DDBJ DATA BANKS.

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 -----

DR EMBL; AE000165; GI786818; -.

DR EMBL; U82298; GI778520; -.

DR ECOGNE; EG13553; YBDN.

KW HYPOTHETICAL PROTEIN

SQ SEQUENCE 406 AA; 47826 MW; 1DC71FAD CRC32;

Query Match 34.1%; Score 75; DB 1; Length 406;  
 Best Local Similarity 41.2%; Pred. No. 8.51e-01;  
 Matches 7; Conservative 4; Mismatches 6; Indels 0; Gaps 0;  
 Db 49 ELARQMGKKKICVLFIDW 65  
 :||:||:||:||:  
 QY 1 diskqneearvrliew 17

Search completed: Mon Oct 4 15:26:59 1999  
 Job time : 8 secs.



PROTEIN; 97366292.

RA WHEELER M.B.; SATKURAJAH M.; WEN Y.; BRUBAKER P.L.; PEDERSON R.A., "The Xenopus proglucagon gene encodes novel GLP-1-like peptides with insulinotropic properties." PROC. NATL. ACAD. SCI. U.S.A. 94:7915-7920(1997).

RT PROSITE; PS00123; G230501.8; -;

DR PFAM; PF00123; hormone2\_4.

UR SEQUENCE; PS00260; GLUCAGON; 3.

DB 105 DYTQHDLDEKAKEFIDWLINGGPT 128  
| :| :| | :| :||| | :| :| :|  
1 diskqmeearvifewiknggpps 24

Query Match Score 105; DB 13; Length 219;  
Best Local Similarity 45.9%; Pred. No. 5.34e-05;  
Matches 11; Conservative 8; Mismatches 5; Indels 0; Gaps 0;

RESULT 3 PRELIMINARY; PRT; 2127 AA.  
ID 057294; AC 057294; DT 01-JUN-1998 (TREMBLREL. 06, CREATED)  
DT 01-JUN-1998 (TREMBLREL. 06, LAST SEQUENCE UPDATE)  
DT 01-JUN-1998 (TREMBLREL. 06, LAST ANNOTATION UPDATE)

DE L. PROTEIN, RNA DEPENDENT RNA POLYMERASE.

GN L.

OS RABIES VIRUS

OC VIRUSES; SRNA NEGATIVE-STRAND VIRUSES; MONONEGAVIRALES; RABDOVIRIDAE; LYSSAVIRUS.

RN 1.]  
RP SEQUENCE FROM N.A.  
RC STRAIN=RC-H1;

RA MINAMOTO N.;  
RL SUBMITTED (JAN-1998) TO EMBL/GENBANK/DDBU DATA BANKS.

RN 2.]  
RN 3] RP SEQUENCE FROM N.A.  
RC STRAIN=RC-H1;

RA MINAMOTO N.;  
RL SUBMITTED (DEC-1997) TO EMBL/GENBANK/DDBU DATA BANKS.

RN 4] RP SEQUENCE FROM N.A.

RC STRAIN=RC-H1;

RA MINAMOTO N.;  
RL SUBMITTED (JAN-1998) TO EMBL/GENBANK/DDBU DATA BANKS.

DR EMBL; AB009663; D1024594; -.

DR EMBL; AB009601; D1024589; -.

DR EMBL; AB009601; D1024589; -.

SQ SEQUENCE 2127 AA; 242427 MW; 847321FB CRC32;

Query Match Score 95; DB 14; Length 2127;  
Best Local Similarity 47.6%; Pred. No. 2.41e-03;  
Matches 10; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

Db 37 NLNSPLIEPYRMLEWLKTG 57  
| :| :| :| :| :| :| :| :|  
1 diskqmeearvifewikng 21

Query Match Score 95; DB 14; Length 2127;  
Best Local Similarity 47.6%; Pred. No. 1.09e-02;  
Matches 11; Conservative 9; Mismatches 8; Indels 1; Gaps 1;

DR 164 SREMAAAMAR-FLEWAATGGCAGATPLPG 191  
| :| :| | :| :| :| :| :|  
Qy 3 shqmeearvifewiknggps 31

RESULT 5 PRELIMINARY; PRT; 552 AA.  
ID Q38064; AC Q38064; DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
DT 01-NOV-1998 (TREMBLREL. 03, LAST ANNOTATION UPDATE)

DE REPLICASE.

OS BACTERIOPHAGE PP7.

OC VIRUSES; SRNA POSITIVE-STRAND VIRUSES; NO DNA STAGE; LEVIVIRIDAE; LEVIVIRUS.

RN [1]  
RP SEQUENCE FROM N.A.  
RC MEDLINE; 95133159.

RA OOLSTHOORN R.C.L.; GARDE G.; DAYHUFF T.; ATKINS J.F.; VAN DUIN J.;  
RP Nucleotide sequence of a single-stranded RNA phage from Pseudomonas aeruginosa: kinship to coliphages and conservation of regulatory RNA structures. J. VIROLOGY 69:611-625 (1995).  
RN 206:611-625 (1995).

DR EMBL; X80194; G31724.L; -.

SQ SEQUENCE 552 AA; 63300 MW; 35D63A16 CRC32;

Query Match Score 86; DB 9; Length 552;  
Best Local Similarity 45.0%; Pred. No. 6.70e-02;  
Matches 9; Conservative 9; Mismatches 0; Indels 2; Gaps 2;

Db 483 DISKRUDDE-YR-YVDWLNR 500  
| :| :| :| :| :| :| :| :|  
Qy 1 diskqmeearvifewikn 20

RESULT 6 PRELIMINARY; PRT; 66 AA.  
ID Q91188; AC Q91188; DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)

DE GLUCAGON (FRAGMENT).

OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).

OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGI; NEOPTERYGII; TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGI; SALMONIFORMES; SALMONIDAE; ONCORHYNCHUS.

RN [1]  
RP SEQUENCE FROM N.A.  
RC TISSUE-PANCREAS;

RA IRWIN D.M.; WONG J.J.;  
RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2." MOL. ENDOCRINOL. 9:667-677(1995).

DR EMBL; U19913; G73636L;  
DR PFAM; PF00123; hormone2\_2.

FT NON-TER 1 1

SQ SEQUENCE 66 AA; 7680 MW; 62C576E2 CRC32;

Query Match Score 77; DB 13; Length 66;  
Best Local Similarity 38.1%; Pred. No. 1.53e-00;  
Matches 8; Conservative 8; Mismatches 5; Indels 0; Gaps 0;

Db 41 DVSTYLDQAAKDFYSWIKSG 61  
| :| :| :| :| :| :| :| :|

RA KLINE M.F.; STILLWELL L.C.; WONG K.-K.; THURSTON S.-J.; SISK E.C.;  
PA SENSEN C.W.; GAASTERLAND T.; SAFFER J.D.; FREDRICKSON J.K.;  
RT "Complete sequence of a 184 kb catabolic plasmid from *Sphingomonas* aromaticivorans strain F199."  
RL SUBMITTED (JUL-1998) TO EMBL/GENBANK/DDBU DATA BANKS.

QY 1 diskqmeeeavrifiewlkng 21

RESULT 7 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)

ID 091409; Q91232; PRELIMINARY; PRT; 72 AA.

AC Q91409; Q91232; DE GLUCAGON II.

DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)

DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).

OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;

OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;

OC ONCORHYNCHUS.

RN [1]

RP SEQUENCE FROM N.A.

RX MEDLINE; 9529739.

RA IRWIN D.M.; WONG J.; CREATED)

RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";

RL MOL. ENDOCRINOL. 9:267-277(1995).

RT transcripts encoding glucagon-like peptide 2.;"

RL MOL. ENDOCRINOL. 9:267-277(1995).

EMBL; U19947; S78474; E206590; -.

EMBL; U19920; G736567; -.

PFAM; PF00123; hormone2; 3.

FT NON\_TER 1 1

SEQUENCE 72 AA; 8293 MW; 0F7AF3EC CRC32;

SQ 47 DVSTYLQDQAAKDFVSWLKSG 67

Query Match 35.0%; Score 77; DB 13; Length 72;

Best Local Similarity 38.1%; Pred. No. 1.53e+00;

Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

DB 98 DVSTYLQDQAAKDFVSWLKSG 118

QY 1 diskqmeeeavrifiewlkng 21

RESULT 8 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)

ID 091408; Q91232; PRELIMINARY; PRT; 72 AA.

AC Q91408; Q91232; DE GLUCAGON I.

DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)

DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).

OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;

OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;

OC ONCORHYNCHUS.

RN [1]

RP SEQUENCE FROM N.A.

RX MEDLINE; 9529739.

RA IRWIN D.M.; WONG J.; CREATED)

RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";

RL MOL. ENDOCRINOL. 9:267-277(1995).

RT transcripts encoding glucagon-like peptide 2.;"

RL MOL. ENDOCRINOL. 9:267-277(1995).

EMBL; U19947; S78474; E206590; -.

EMBL; U19920; G736567; -.

PFAM; PF00123; hormone2; 3.

FT NON\_TER 1 1

SEQUENCE 72 AA; 8293 MW; 0F7AF3EC CRC32;

SQ 47 DVSTYLQDQAAKDFVSWLKSG 67

Query Match 35.0%; Score 77; DB 13; Length 72;

Best Local Similarity 38.1%; Pred. No. 1.53e+00;

Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

DB 98 DVSTYLQDQAAKDFVSWLKSG 118

QY 1 diskqmeeeavrifiewlkng 21

RESULT 9 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)

ID 091189; Q92168; PRELIMINARY; PRT; 178 AA.

AC Q91189; Q92168; DE LONG HYPOTHEICAL TRANSCRIPTION INITIATION FACTOR IIB.

DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

DE GLUCAGON II.

OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).

OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;

OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;

OC ONCORHYNCHUS.

RN [1]

RP SEQUENCE FROM N.A.

RX MEDLINE; 9529739.

RA IRWIN D.M.; WONG J.; CREATED)

RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";

RL MOL. ENDOCRINOL. 9:267-277(1995).

RT transcripts encoding glucagon-like peptide 2.;"

RL MOL. ENDOCRINOL. 9:267-277(1995).

EMBL; S78473; G99933; -.

PFAM; PF00123; hormone2; 2.

FT NON\_TER 1 1

SEQUENCE 72 AA; 8293 MW; 0F7AF3EC CRC32;

SQ 47 DVSTYLQDQAAKDFVSWLKSG 67

Query Match 35.0%; Score 77; DB 13; Length 72;

Best Local Similarity 38.1%; Pred. No. 1.53e+00;

Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

DB 98 DVSTYLQDQAAKDFVSWLKSG 118

QY 1 diskqmeeeavrifiewlkng 21

RESULT 10 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)

ID 091971; Q91971; PRELIMINARY; PRT; 178 AA.

AC Q91971; Q91971; DE GLUCAGON I.

DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)

DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).

OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;

OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;

OC ONCORHYNCHUS.

RN [1]

RP SEQUENCE FROM N.A.

RX MEDLINE; 9529739.

RA IRWIN D.M.; WONG J.; CREATED)

RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";

RL MOL. ENDOCRINOL. 9:267-277(1995).

RT transcripts encoding glucagon-like peptide 2.;"

RL MOL. ENDOCRINOL. 9:267-277(1995).

EMBL; S78475; G99935; -.

PROSITE; PS00160; GLUCAGON; 3.

PFAM; PF00123; hormone2; 3.

SQ SEQUENCE 178 AA; 20034 MW; 2056F963 CRC32;

Query Match 35.0%; Score 77; DB 13; Length 178;

Best Local Similarity 38.1%; Pred. No. 1.53e+00;

Matches 8; Conservative 5; Mismatches 5; Indels 0; Gaps 0;

DB 98 DVSTYLQDQAAKDFVSWLKSG 118

QY 1 diskqmeeeavrifiewlkng 21

RESULT 11 DT 01-AUG-1998 (TREMBLREL. 07, CREATED)

ID 059151; Q59151; PRELIMINARY; PRT; 300 AA.

AC Q59151; Q59151; DE GLUCAGON II.

DT 01-AUG-1998 (TREMBLREL. 07, LAST SEQUENCE UPDATE)

DT 01-JAN-1999 (TREMBLREL. 09, LAST ANNOTATION UPDATE)

DE 300AA LONG HYPOTHETICAL TRANSCRIPTION INITIATION FACTOR IIB.

GN PH1482.

OS PYROCOCCUS HORIKOSHII.	RA BAILEY A.M., KRON J.P.R., OWEN J., HARGREAVES J.A.;
CC [1] SEQUENCE FROM N.A.	RA "The ACC1 gene, encoding a acetyl-CoA carboxylase, is essential for
RN STRAIN=OT3;	RT growth in <i>Ustilago maydis</i> ;"
RC	RL MOL. GENET 249:191-201(1995)
RX MEDLINE: 96344137.	CC -!- CATALYTIC ACTIVITY: ATP + ACETYL-COA + HCO(3)(-) = ADP +
RA KAWABAYASHI S., SANO M., HORIKAWA H., HAIZAWA Y., HINO Y.,	CC PHOSPHATE + MALONYL-COA.
RA YAMAMOTO S., SEYINE M., BABA S., KOGUCHI H., HOSOYAMA A., NAGAI Y.,	CC COFACTOR: BIOTIN.
KA SAKAI M., OGURA K., OTUKA R., NAKAZAWA H., TAKAMIYA M., OHFUKU Y.,	DR EMBL; 246886; G60058; -.
RA FUNAHASHI T., TANAKA T., KUDOU Y., KUSHIDA N., OGUCHI A.,	DR PFAM; PF00289; CPSase_L_chain; 1.
RA AOKI K., NAKAMURA Y., ROBB T.F., HORIKOSHI K., MASUCHI Y., SHIZUYA H.,	DR PFAM; PF00364; biotin_req_enzyme; 1.
RA KIKUCHI H.;	DR PFAM; PF01039; Carboxyl_trans; 1.
RA "Complete Sequence and Gene Organization of the Genome of a Hyperthermophilic Archaeabacterium, Pyrococcus horikoshii OT3.";	KW LIGASE.
RT DNA RES: 76(1998).	SQ SEQUENCE 2185 AA; 240029 MW; 84AA60F1 CRC32;
RL EMBL; AP000006; D1031532; -.	Query Match 34.5%; Score 76; DB 3; Length 2185;
DR PROSITE; PS00782; TFLIB; 2.	Best Local Similarity 34.5%; pred. No. 2.14e+00;
INITIATION FACTOR.	Matches 10; Conservative 8; Mismatches 11; Indels 0; Gaps 0;
-2- SEQUENCE 300 AA; 34097 MW;	Db 1763 LTADQDLDAYRSFYNNNTSYPAORGGLPL 1791
Query Match 34.5%; Score 76; DB 1; Length 300;	Query Match 34.5%; Score 76; DB 3; Length 2185;
Best Local Similarity 50.0%; Pred. No. 2.14e+00;	Best Local Similarity 34.5%; pred. No. 2.14e+00;
Matches 10; Conservative 7; Mismatches 3; Indels 0; Gaps 0;	Matches 10; Conservative 8; Mismatches 11; Indels 0; Gaps 0;
Db 125 LPKHYEEAARLYREAVRKG 144	RESULT 14
QY 2 lskqmeeaavrlfielwlgng 21	ID Q59339 PRELIMINARY; PRT; 664 AA.
RESULT 12	AC Q59339; CREATED)
ID Q48538; PRELIMINARY; PRT; 333 AA.	DT 01-NOV-1996 (TREMBLREL. 01, CREATED)
AC DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)	DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)
AC DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)	DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)
DE INTEGRASE/RECOMBINASE.	DE ADENYLYL-SULPHATE REDUCTASE ALFA-SUBUNIT (EC 1.8.99.2)
OS LACTOBACILLUS DELBRUECKII.	DE (ADENYLYLSULFATE REDUCTASE).
OG PLASMID_PSE58.	GN APSA.
OC BACTERIA; FIRMITICUTES; BACILLUS/CLOSTRIDIUM GROUP; LACTOBACILLACEAE;	OS DESULFOVIBRIO VULGARIS.
OC LACTOBACILLUS.	OC BACTERIA; PROTEOBACTERIA; DELTA SUBDIVISION; DESULFOVIBRIO.
RN [1]	RN [1]
RP SEQUENCE FROM N.A.	RP SEQUENCE FROM N.A.
RC STRAIN=WS58;	RC STRAIN=HILDENBOROUGH NCIMB 8303;
RA SUBMITTED (AUG-1995) TO EMBL/GENBANK/DBJ/ DATA BANKS.	RA VAN DEN BERG W., VAN DONGEN W., HAGEN W.;
RA [1]	RA SUBMITTED (FEB-1996) TO EMBL/GENBANK/DBJ/ DATA BANKS.
RP SEQUENCE FROM N.A.	RN [2]
RC LACTOBACILLUS.	RP SEQUENCE FROM N.A.
RA TRUPER H.J., HENRICH B.;	RC STRAIN=HILDENBOROUGH NCIMB 8303;
RA SUBMITTED (AUG-1995) TO EMBL/GENBANK/DBJ/ DATA BANKS.	RA SPEICH N., DAHL C., HEISING P., KLEIN A., LOTTISPEICH F., STEITER K.,
RA [1]	RA TRUPER H.;
PLASMID; Z50844; G371481; -.	RT "Adenylyl sulphate reductase from the sulphate-reducing archaeon Archaeoglobus fulgidus: cloning and characterization of the genes and comparison of the enzyme with other iron-sulphur flavoproteins.";
PLASMID; PF00589; Phage_integrase; 1.	RT MICROBIOLOGY 140:1273-1284 (1994).
SQ SEQUENCE 333 AA; 38147 MW;	RL OXIDOREDUCTASE.
Query Match 34.5%; Score 76; DB 2; Length 333;	CC -!- CATALYTIC ACTIVITY: AMP + SULFITE + ACCEPTOR = ADENYLYLSULFATE +
Best Local Similarity 30.4%; Pred. No. 2.14e+00;	CC REDUCED ACCEPTOR.
Matches 7; Conservative 9; Mismatches 7; Indels 0; Gaps 0;	CC -!- COFACTOR: FAD; IRON.
Db 73 QTSESTIKLYMQWLQNQGPST 95	DR EMBL; B6937; E221398; -.
QY 5 gmeeeavrlfielwlgngpsga 27	DR PF00890; FAD_binding_2; 1.
RESULT 13	DR SEQUENCE 664 AA; 74627 MW; ED99E3E CRC32;
ID Q12721; PRELIMINARY; PRT; 2185 AA.	Query Match 34.1%; Score 75; DB 2; Length 664;
AC Q12721; CREATED)	Best Local Similarity 41.2%; pred. No. 2.98e+00;
DT 01-NOV-1996 (TREMBLREL. 01, CREATED)	Matches 7; Conservative 8; Mismatches 1; Indels 1; Gaps 1;
DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)	Db 108 DLGRIVDD-SVHLFEW 123
DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)	QY 1 dlskqmeeaavrlfielwlgngpsga 17
DE ACETYL COA CARBOXYLASE (EC 6.4.1.2) (ACETYL-COA CARBOXYLASE).	RESULT 15
GN ACC.	ID 088807; PRELIMINARY;
OS USTILAGO MAYDIS (SMUT FUNGUS).	AC 088807; CREATED)
OC EUKARYOTA; FUNGI; BASIDIOMYCOTA; USTILAGINOMYCETES;	DT 01-NOV-1998 (TREMBLREL. 08, CREATED)
OC USTILAGINOMYCETIDAE; USTILAGINALES; USTILAGINACEAE; USTILAGO.	DT 01-NOV-1998 (TREMBLREL. 08, LAST SEQUENCE UPDATE)
RN [1]	DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)
RP SEQUENCE FROM N.A.	RC
RC STRAIN=IMI103761;	

DE	PEPTIDYLARGININE DEIMINASE TYPE IV (EC 3.5.3.15)
DE	(PROTEIN-ARGININE DEIMINASE).
PAD-R4.	
DS	RATTUS NORVEGICUS (RAT).
DOC	EUKARYOTA; METAEOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA; RODENTIA;
DC	SCIROGNATHI; MORIDAE; MORINAIE; RATTUS.
DRN	[1]
RN	SEQUENCE FROM N.A.
RP	
RX	MLINE; 98409324.
RT	ISHIGAMI A., KURAMOTO M., YAMADA M., WATANABE K., SENSHU T.; "Molecular cloning of two novel types of peptidylarginine deiminase cDNAs from retinoic acid-treated culture of a newborn rat keratinocyte cell line."; FEBS LETT. 433:113-118(1998).
RT	- - CATALYTIC ACTIVITY: PROTEIN L-ARGININE + H(2)O = PROTEIN L-CITRULLINE + NH(3). EMBL: AB010999; D1033062; - .
RW	HYDROLASE.
ISQ	SEQUENCE 666 AA; 74467 MW;
	3E64EDDD CRC32;
Ddb	Query Match 34.1%; Score 75; DB 11; Length 666; Last Local Similarity 41.1%; Pred. No. 2.98e+00; tches 8; Conservative 4; Mismatches 5; Indels 0; Gaps 0
Qy	1: : : : : : : : : : : 2 1skqmeeavrlfiewl 18



Release 3.1A John F. Collins, Biocomputing Research Unit.

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... .cct...PP protein - Protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:26:14 1999; WasPar time 11.75 Seconds  
56.092 Million cell updates/sec

...ular output not generated.

*Claim 82*  
*X = Y*

Description: >MOHAM-312-CLAIM82B.PEP  
(1-31) from moham312177.pep  
Perfect Score:  
Sequence: 1 hgegtfsdskgmeeaavrifewlknggy 31  
Scoring table: PAM 150  
Gap 11

Searched: 170751 seqs, 21266608 residues

Post-processing: Minimum Match 0%  
Listing first 45 summaries

Database: a-geneseq35

1:part1 2:part2 3:part3 4:part4 5:part5 6:part6 7:part7  
6:part8 9:part9 10:part10 11:part11 12:part12 13:part13  
14:part14 15:part15 16:part16 17:part17 18:part18  
19:part19 20:part20 21:part21 22:part22 23:part23  
24:part24 25:part25 26:part26 27:part27 28:part28  
29:part29 30:part30 31:part31 32:part32 33:part33  
34:part34 35:part35 36:part36 37:part37 38:part38  
39:part39

Statistics: Mean 24.523; Variance 105.941; scale 0.231

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No. Score Query Match Length DB ID Description Pred. No.

Result No.	Score	Query	Match	Length	DB	ID	Description	Pred. No.
1	231	100.0	31 14 R80544	Heloderma suspectum e	1.93e-12			
2	219	94.8	30 39 W61771	Exendin-4 (1-30) for	2.44e-11			
3	219	94.8	31 14 R80543	Heloderma suspectum e	2.44e-11			
4	219	94.8	39 14 R80546	Heloderma suspectum e	2.44e-11			
5	219	94.8	39 39 W61770	Exendin-4, for use in Gila monster exendin-4	2.44e-11			
6	219	94.8	39 30 W47609	Gila monster exendin-4	2.44e-11			
7	219	94.8	87 35 W70288	Heloderma suspectum p	2.44e-11			
8	212	91.8	30 29 W39302	H. horridum exendin-4	1.06e-10			
9	212	91.8	39 39 W61769	Exendin-3, for use in Gila monster exendin-3	1.06e-10			
10	212	91.8	39 30 W47608	Gila monster exendin-3	1.06e-10			
11	212	91.8	39 14 R80545	Heloderma horridum ex	1.06e-10			
12	89.6	30 29 W39309	H. horridum exendin-4	3.03e-10				
13	205	88.7	28 39 W61772	Exendin-4 (1-28) amid	4.60e-10			
14	205	88.7	30 29 W39368	H. horridum exendin-3	4.60e-10			
15	205	88.7	30 29 W39301	H. horridum exendin-3	4.60e-10			
16	203	87.9	30 29 W39312	H. horridum exendin-4	6.99e-10			

RESULT 1  
JD R80544 standard; peptide; 31 AA.

AC R80544;

DT 27-FEB-1996 (first entry)

DE Heloderma suspectum exendin-4 residues 1-31-Tyr31.

RW Exendin-4; residues 1-31; Y-31-Exendin-4(1-31); diabetes mellitus;

KW hyperglycaemia; Tyr31; insulinotrophic peptide.

OS Heloderma suspectum.

EN 13-JUN-1995.

PD Leu(14), Phe(25)-exen

4.56e-09

PF 24-MAY-1995; 066480.

PA (ENG) US-066480.

PA (ENG) J.

DR 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -

PT for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 2; Columns 13-14; 17PP; English.

CC R80544 is the Heloderma suspectum exendin-4 residues 1-31, where

the native Pro31 has been replaced with a Tyr residue. It is an

insulinotropic peptide, and can therefore be used in the treatment of

diabetes mellitus (types I or II), and for the prevention of

hyperglycemia. It normalises hyperglycaemia through glucose-dependent

CC and insulin(in)dependent mechanisms.

CC Sequence 31 AA;

CC

Query Match Score 231; DB 14; Length 31;

Best Local Similarity 100.0%; Pred. No. 1.93e-12;

Mismatches 0; Indels 0; Gaps 0;

Matches 31; Conservative 31;

Db 1 hgegtfsdskgmeeaavrifewlknggy 31

Oy 1 hgegtfsdskgmeeaavrifewlknggy 31

RESULT 2  
ID W61771 standard; peptide; 30 AA.

AC W61771;

DT 29-MAR-1999 (first entry)

DE Exendin-4 (1-30) for use in treating disorders related to food intake.

#### ALIGNMENTS

1	JD R80544	standard; peptide; 31 AA.
AC R80544;		
DT 27-FEB-1996 (first entry)		
DE Heloderma suspectum exendin-4 residues 1-31-Tyr31.		
RW Exendin-4; residues 1-31; Y-31-Exendin-4(1-31); diabetes mellitus;		
KW hyperglycaemia; Tyr31; insulinotrophic peptide.		
OS Heloderma suspectum.		
EN 13-JUN-1995.		
PD Leu(14), Phe(25)-exen		
PF 24-MAY-1995; 066480.		
PA (ENG) US-066480.		
PA (ENG) J.		
DR 95-262627/34.		
PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -		
PT for treating diabetes mellitus and preventing hyperglycaemia.		
PS Claim 2; Columns 13-14; 17PP; English.		
CC R80544 is the Heloderma suspectum exendin-4 residues 1-31, where		
the native Pro31 has been replaced with a Tyr residue. It is an		
insulinotropic peptide, and can therefore be used in the treatment of		
diabetes mellitus (types I or II), and for the prevention of		
hyperglycemia. It normalises hyperglycaemia through glucose-dependent		
CC and insulin(in)dependent mechanisms.		
CC Sequence 31 AA;		
CC		
Query Match Score 231; DB 14; Length 31;		
Best Local Similarity 100.0%; Pred. No. 1.93e-12;		
Mismatches 0; Indels 0; Gaps 0;		
Matches 31; Conservative 31;		
Db 1 hgegtfsdskgmeeaavrifewlknggy 31		
Oy 1 hgegtfsdskgmeeaavrifewlknggy 31		

KW Exendin; obesity; type II diabetes; eating disorders; cardiac disease;  
 KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 OS Heloderma suspectum.

FS Key Location/Qualifiers  
 FT Modified\_site 30 /note= "optionally the C-terminal is in amide form"

PT WO930231A1.  
 PD 16-JUL-1998.  
 PF 07-TAN-1998; US00449.  
 PR 14-NOV-1997; US-066029.  
 PS 07-TAN-1997; US-034005.  
 PR 08-AUG-1997; US-055004.  
 PR 14-NOV-1997; US-06542.  
 PA (AMYL-) AMYLIN PHARM INC.  
 PI Beeley NRA; Bhavsar S; Prickett KS;  
 DR WPI; 98-398796/34.  
 DR Reducing food intake by administering exendins or their  
 analogues - for treatment of e.g. obesity, type II diabetes,  
 eating disorders and insulin resistance.

PS Claims 18, 26; Page 11; 214pp; English.

CC The invention relates to a new method for treating disorders that  
 CC are alleviated by reducing food intake, in particular obesity, type  
 CC II diabetes, eating disorders, insulin resistance syndrome, elevated  
 CC plasma glucose levels, or the risk of cardiac disease. The method  
 CC comprises administering an exendin or an exendin agonist. The treatment  
 CC reduces appetite and lowers plasma lipid levels. It inhibits food  
 CC consumption as amylin or cholecystokinin but has a much  
 CC longer-lasting action (still effective after 6 hours in a mouse model).  
 CC The present sequence is that of exendin 4 (-30) or its amide which is  
 CC one of the preferred compounds for use in the method.  
 SQ Sequence 30 AA;

Query Match 94.8%; Score 219; DB 39; Length 30;  
 Best Local Similarity 100.0%; Pred. No. 2.44e-11;  
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 1 hgegtftsdiskqmeeeavrfliewlkngg 30  
 Qy 1 hgegtftsdiskqmeeeavrfliewlkngg 30

RESULT 3  
 ID R80543 standard; peptide; 31 AA.

AC R80543; 27-FEB-1996 (first entry)

CC Heloderma suspectum exendin-4 residues 1-31 (Exendin-4(1-31)).  
 Exendin-4, residues 1-31; Exendin-4(1-31); diabetes mellitus;  
 KW Heloderma suspectum.

OS WO930231A1.

PD 13-JUN-1995.

PF 24-MAY-1993; US066480.

PA (ENGL-) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.  
 PS Claim 1; Columns 13-14; 17pp; English.  
 CC WO930231A1 is the Heloderma suspectum exendin-4.  
 Exendin-4; diabetes mellitus; hyperglycaemia; insulinotrophic peptide.  
 DE Heloderma suspectum.  
 KW Exendin-4; diabetes mellitus; hyperglycaemia; insulinotrophic peptide.  
 OS Heloderma suspectum.

PN US5424286A.

PD 13-JUN-1995.

PR 24-MAY-1993; US-066480.

PA (ENGL-) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 1; Columns 13-14; 17pp; English.

CC WO930231A1 is the Heloderma suspectum exendin-4. It is an  
 insulinotrophic peptide, and can therefore be used in the treatment of  
 diabetes mellitus (types I or II), and for the prevention of  
 hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 and insulin-(in)dependent mechanisms.

DE Exendin-4, residues 1-31. It is an exendin agonist. The treatment  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
 compounds for use in the method.

PI Beeley NRA; Bhavsar S; Prickett KS;  
 DR WPI; 98-398796/34.

PT Reducing food intake by administering exendins or their  
 analogues - for treatment of e.g. obesity, type II diabetes,  
 eating disorders and insulin resistance.

PS Claims 17, 23; Page 8; 214pp; English.

CC The invention relates to a new method for treating disorders that  
 are alleviated by reducing food intake, in particular obesity, type  
 II diabetes, eating disorders, insulin resistance syndrome, elevated  
 plasma glucose levels, or the risk of cardiac disease. The method  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
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PS Claims 17, 23; Page 8; 214pp; English.

CC The invention relates to a new method for treating disorders that  
 are alleviated by reducing food intake, in particular obesity, type  
 II diabetes, eating disorders, insulin resistance syndrome, elevated  
 plasma glucose levels, or the risk of cardiac disease. The method  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
 compounds for use in the method.

Query Match 94.8%; Score 219; DB 39; Length 31;

Best Local Similarity 100.0%; Pred. No. 2.44e-11;

Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 1 hgegtftsdiskqmeeeavrfliewlkngg 30

Qy 1 hgegtftsdiskqmeeeavrfliewlkngg 30

RESULT 4  
 ID R80546 standard; peptide; 39 AA.

AC R80546; 27-FEB-1996 (first entry)

CC DE Heloderma suspectum exendin-4.

PS Claim 6; Columns 13-14; 17pp; English.

CC R80546 is Heloderma suspectum exendin-4. It is an  
 insulinotrophic peptide, and can therefore be used in the treatment of  
 diabetes mellitus (types I or II), and for the prevention of  
 hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 and insulin-(in)dependent mechanisms.

PN US524286A.

PD 13-JUN-1995.

PR 24-MAY-1993; US-066480.

PA (ENGL-) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 1; Columns 13-14; 17pp; English.

CC WO930231A1 is the Heloderma suspectum exendin-4.

Exendin-4; diabetes mellitus; hyperglycaemia; insulinotrophic peptide.

DE Heloderma suspectum.

KW Exendin-4; diabetes mellitus; hyperglycaemia; insulinotrophic peptide.

OS Heloderma suspectum.

PD 13-JUN-1995.

PR 24-MAY-1993; US-066480.

PA (ENGL-) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 1; Columns 13-14; 17pp; English.

CC WO930231A1 is the Heloderma suspectum exendin-4. It is an  
 insulinotrophic peptide, and can therefore be used in the treatment of  
 diabetes mellitus (types I or II), and for the prevention of  
 hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 and insulin-(in)dependent mechanisms.

DE Exendin-4, residues 1-31. It is an exendin agonist. The treatment  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
 compounds for use in the method.

PI Beeley NRA; Bhavsar S; Prickett KS;  
 DR WPI; 98-398796/34.

PT Reducing food intake by administering exendins or their  
 analogues - for treatment of e.g. obesity, type II diabetes,  
 eating disorders and insulin resistance.

PS Claims 17, 23; Page 8; 214pp; English.

CC The invention relates to a new method for treating disorders that  
 are alleviated by reducing food intake, in particular obesity, type  
 II diabetes, eating disorders, insulin resistance syndrome, elevated  
 plasma glucose levels, or the risk of cardiac disease. The method  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
 compounds for use in the method.

Query Match 94.8%; Score 219; DB 39; Length 39;

AC R80546; 27-FEB-1996 (first entry)

CC DE Heloderma suspectum exendin-4.

PS Claim 6; Columns 13-14; 17pp; English.

CC R80546 is Heloderma suspectum exendin-4. It is an  
 insulinotrophic peptide, and can therefore be used in the treatment of  
 diabetes mellitus (types I or II), and for the prevention of  
 hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 and insulin-(in)dependent mechanisms.

PN US524286A.

PD 13-JUN-1995.

PR 24-MAY-1993; US-066480.

PA (ENGL-) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 1; Columns 13-14; 17pp; English.

CC WO930231A1 is the Heloderma suspectum exendin-4.

Exendin-4; diabetes mellitus; hyperglycaemia; insulinotrophic peptide.

DE Heloderma suspectum.

KW Exendin-4; diabetes mellitus; hyperglycaemia; insulinotrophic peptide.

OS Heloderma suspectum.

PD 13-JUN-1995.

PR 24-MAY-1993; US-066480.

PA (ENGL-) ENG J.

PI Eng J;

DR WPI; 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 1; Columns 13-14; 17pp; English.

CC WO930231A1 is the Heloderma suspectum exendin-4. It is an  
 insulinotrophic peptide, and can therefore be used in the treatment of  
 diabetes mellitus (types I or II), and for the prevention of  
 hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 and insulin-(in)dependent mechanisms.

DE Exendin-4, residues 1-31. It is an exendin agonist. The treatment  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
 compounds for use in the method.

PI Beeley NRA; Bhavsar S; Prickett KS;  
 DR WPI; 98-398796/34.

PT Reducing food intake by administering exendins or their  
 analogues - for treatment of e.g. obesity, type II diabetes,  
 eating disorders and insulin resistance.

PS Claims 17, 23; Page 8; 214pp; English.

CC The invention relates to a new method for treating disorders that  
 are alleviated by reducing food intake, in particular obesity, type  
 II diabetes, eating disorders, insulin resistance syndrome, elevated  
 plasma glucose levels, or the risk of cardiac disease. The method  
 comprises administering an exendin or an exendin agonist. The treatment  
 reduces appetite and lowers plasma lipid levels. It inhibits food  
 consumption as effectively as amylin or cholecystokinin but has a much  
 longer-lasting action (still effective after 6 hours in a mouse model).  
 The present sequence is that of exendin-4 which is one of the preferred  
 compounds for use in the method.

Db	1 hgegtfsdlskqmeeaavrifiewlkngg 30	Peptide	48 .87
Qy	1 hgegtfsdlskqmeeaavrifiewlkngg 30	/note= "Exendin 4"	
RESULT	6	Cleavage_site	46 .47
ID	W47609 standard; peptide; 39 AA.	/note= "Dipeptidyl peptidase cleavage site"	
AC	W47609 (first entry)		
DT	03-JUL-1998 (first entry)		
DE	Gila monster exendin-4.		
KW	Exendin agonist; gastric motility; gastric emptying; treatment;		
KW	spasm; postprandial dumping syndrome; postprandial hypoglycaemia;		
KW	type 1 diabetes; impaired glucose tolerance; toxin ingestion;		
KW	obesity; Gila monster venom; exendin-4.		
OS	Heloderma suspectum.		
FH	Location/Qualifiers		
FT	39	/note= "amidated"	
FT	Modified_site		
PN	W09805351-A1.		
PD	12-FEB-1998.		
PP	08-AUG-1997; WU4199		
PP	08-AUG-1996; US-694554.		
(AMYL ) AMYLIN PHARM INC.			
Beeley NRA; Gedulin B; Prickett KS; Young AA;			
DR	Regulating gastrointestinal motility using exendins or their		
PT	agonists - for treating spasm, diabetic postprandial hyperglycaemia,		
PT	impaired glucose tolerance etc., also in diagnostic investigations		
PS	Claims 20 and 21; FIG 1; 70pp; English.		
PS	W47549 describes a generic exendin agonist, provided that it does		
CC	have the formula of either exendin-3 (W47608) or exendin-4		
CC	(W47609).		
CC	Exendin agonists, which reduce gastric motility and delay gastric		
CC	emptying, can be used to treat spasm (where associated with acute		
CC	diverticulitis or disorders of the biliary tract or sphincter of		
CC	Oddi). Postprandial dumping syndrome and hyperglycaemia		
CC	(Particularly associated with type 2 diabetes), type 1 diabetes,		
CC	impaired glucose tolerance, toxin ingestion (an exendin agonist is		
CC	administered to prevent stomach contents passing into the		
CC	intestines, then the stomach pumped) and obesity. They can also be		
CC	administered to subjects undergoing gastrointestinal diagnostic		
CC	investigation, particularly radiological or by magnetic resonance		
CC	imaging.		
CC	Exendins, components of Gila monster venom, have some sequence		
CC	similarity to glucagon-like peptides (GLP). They are GLP agonists		
CC	and have been suggested (US5424286) for treatment of diabetes and		
CC	prevention of hyperglycaemia.		
SO	Sequence 39 AA;		
Query Match	94 .88;	Score 219; DB 30; Length 39;	
Best Local Similarity	100.0%		
Matches	30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;		
DB	1 hgegtfsdlskqmeeaavrifiewlkngg 30		
Qy	1 hgegtfsdlskqmeeaavrifiewlkngg 30		
RESULT	7	Location/Qualifiers	
ID	W70288 standard; Protein; 87 AA.		
AC	W70288;		
DT	06-NOV-1998 (first entry)		
DE	Heloderma suspectum proexendin peptide; BNTP;		
KW	exendin 4 peptide; exendin 3 gene; Heloderma horridum; metabolic disease;		
KW	drug screening; endocrine tumour; organ failure; cell metabolism;		
KW	diabetes; reptilian venom peptide.		
OS	Heloderma suspectum.		
FH	Location/Qualifiers		
FT	1..23	/note= "Signal peptide"	
FT	Peptide		
FT	Peptide	/note= "ENTP"	
FT	Peptide		

Peptide 48 .87  
 FT /note= "Exendin 4"  
 FT Cleavage\_site 46 .47  
 FT /note= "Dipeptidyl peptidase cleavage site"  
 PN W09805033-A1.  
 PD 13-AUG-1998.  
 PF 04-FEB-1998; CA0071.  
 PR 07-FEB-1997; GB-002582.  
 PR 05-FEB-1997; US-037412.  
 PA (ONFC) 1149336 ONTARIO INC.  
 PI DRUCKER DJ;  
 DR WPI; 98-447230/38.  
 DR N-PSDB; V3163.  
 PT New nucleic acid, encoding proexendin - used to diagnose and treat,  
 e.g. endocrine tumours, also to treat poisoning by reptile venom  
 PT Claim 3; Fig 2; 26pp; English.  
 PS The Heloderma suspectum proexendin peptide is encoded by its cDNA  
 CC which was isolated from a H. suspectum salivary gland cDNA library.  
 CC The proexendin protein comprises of a novel exendin N-terminal  
 CC peptide (BNTP) linked to the N-terminus of the exendin 4 peptide  
 CC by a consensus dipeptidyl peptidase cleavage site. The proexendin  
 CC cDNA can be used to clone or identify related sequences (e.g. the  
 CC exendin 3 gene of Heloderma horridum, mutant alleles and proexendin  
 CC homologues (e.g. for developing animal models for drug screening).  
 CC The Proexendin peptide can be used to raise antibodies. Anti-proexendin  
 CC antibodies are claimed to be useful for diagnosing conditions associated  
 CC with altered levels of proexendin (e.g. endocrine tumours and organ  
 CC failure), for identifying other regulators of cell metabolism, in drug  
 CC screens and for treating metabolic diseases (e.g. diabetes) and for  
 CC neutralising, or detecting, reptilian venom peptides.  
 SQ Sequence 87 AA;

Query Match Score 219; DB 35; Length 87;  
 Best Local Similarity 100.0%; Pred. No. 2.44e-11;  
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

DB 48 hgegtfsdlskqmeeaavrifiewlkngg 77  
 QY 1 hgegtfsdlskqmeeaavrifiewlkngg 30

RESULT 8  
 ID W39302 standard; peptide; 30 AA.  
 AC W39302;  
 DT 05-JUN-1998 (first entry)  
 DE H. horridum exendin 4 peptide.  
 KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
 KW glucagon reduction; hypoglycaemia; glucose; treatment.  
 OS Heloderma horridum.  
 FH Location/Qualifiers  
 FT Modified\_site 30  
 FT /note= "This residue can be any amino acid except Gly"  
 FT  
 PN W09745584-A1.  
 PD 11-DEC-1997; EP2930.  
 PR 05-JUN-1997; DE-037230.  
 PR 13-SEP-1996; DE-022502.

PA (BOEFL) BOPHRINGER MANNHEIM GMBH.  
 PI Goede B, Goede R, Hoffmann E;  
 DR WPI; 98-042119/04.  
 PR Truncated versions of exendin peptide(s) for treating diabetes -  
 PR increase secretion and biosynthesis of insulin, but reduce those of  
 PR glucagon, and do not induce hypoglycaemia.  
 PS Claim 1; Page 4; 150pp; English.  
 CC This Peptide is a fragment of exendin-4 isolated from Heloderma  
 CC horridum. This Peptide and its salts, esters and derivatives can be  
 CC used to treat diabetes mellitus. They stimulate biosynthesis and  
 CC secretion of insulin, but have the opposite effect on glucagon, and  
 CC independent of this activity can increase peripheral glucose utilisation.  
 CC Exendin-3 and exendin-4 are only active when blood sugar levels are  
 CC high, so they will not induce hypoglycaemia. Compared with glucagon-like

CC peptide 1 (GLP1) and the known exendins, they are more active (effective at lower doses), more stable to degradation and metabolism and have a longer lasting effect. Truncated forms of this peptide can be made more economically than full length versions.

SQ Sequence 30 AA;

Query Match 91.8%; Score 212; DB 29; Length 30;  
Best Local Similarity 100.0%; Pred. No. 1.06e-10; Indels 0; Gaps 0;  
Matches 29; Conservative 0; Mismatches 0;

Db 1 hsggtftsdiskqmeeavrfliewlkngg 29  
|||:|||||:|||||:|||||:|||||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 29  
|||:|||||:|||||:|||||:|||||:  
SQ Sequence 30 AA;

**RESULT 9**  
W61769 standard; Peptide; 39 AA.  
W61769;

29-MAR-1999 (first entry)  
DE Exendin-, for use in treating disorders related to food intake.

KW Exendin; obesity; type II diabetes; eating disorders; cardiac disease; insulin resistance syndrome; elevated plasma glucose level; agonist.

OS Heloderma horridum.

PN WO830231-A1.

PD 16-JUL-1998.

PF 07-JAN-1998; U00449.

PR 14-NOV-1997; US-066029.

PR 07-JAN-1997; US-034905.

PR 08-AUG-1997; US-055404.

PR 14-NOV-1997; US-065442.

PA (AMYLIN PHARM INC.

PI Beeley NRA, Bhavasar S, Prickett KS;

DR WPI; 98-398796/34.

Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, eating disorders and insulin resistance.

PS Claims 16, 24; Page 8; 214pp; English.

CC The invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer-lasting action (still effective after 6 hours in a mouse model).

The present sequence is that of exendin-3 which is one of the preferred compounds for use in the method.  
Sequence 39 AA;

Query Match 91.8%; Score 212; DB 39; Length 39;  
Best Local Similarity 93.3%; Pred. No. 1.06e-10; Indels 0; Gaps 0;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsggtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:|||||:|||||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:|||||:|||||:  
SQ Sequence 39 AA;

Query Match 91.8%; Score 212; DB 39; Length 39;  
Best Local Similarity 93.3%; Pred. No. 1.06e-10; Indels 0; Gaps 0;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsggtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:|||||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:|||||:  
SQ Sequence 39 AA;

**RESULT 10**  
W47608 standard; peptide; 39 AA.

DE Gila monster exendin-3.

KW Exendin agonist; gastric motility; gastric emptying; treatment; spasm; postprandial dumping syndrome; postprandial hyperglycaemia; type I diabetes; impaired glucose tolerance; toxin ingestion; obesity; Gila monster venom; exendin-3.

OS Heloderma horridum.

PD 12-FEB-1998.

FT Modified\_site 39  
FT /note= "amidated"

PN WO9805351-A1.

PD 12-FEB-1998.

CC peptide 1 (GLP1) and the known exendins, they are more active (effective at lower doses), more stable to degradation and metabolism and have a longer lasting effect. Truncated forms of this peptide can be made more economically than full length versions.

SQ Sequence:

Query Match 91.8%; Score 212; DB 29; Length 30;  
Best Local Similarity 100.0%; Pred. No. 1.06e-10; Indels 0; Gaps 0;  
Matches 29; Conservative 0; Mismatches 0;

Db 1 hgegtftsdiskqmeeavrfliewlkngg 29  
|||:|||||:|||||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 29  
|||:|||||:|||||:  
SQ Sequence 30 AA;

Exendin agonists, which reduce gastric motility and delay gastric emptying, can be used to treat spasm (where associated with acute diverticulitis or disorders of the biliary tract or sphincter of Oddi). Postprandial dumping syndrome and hyperglycaemia (particularly associated with type 2 diabetes, type 1 diabetes, impaired glucose tolerance, toxin ingestion (an exendin agonist is administered to prevent stomach contents passing into the intestines, then the stomach pumped) and obesity. They can also be administered to subjects undergoing gastrointestinal diagnostic investigation, particularly radiological or by magnetic resonance imaging.

Exendins, components of Gila monster venom, have some sequence similarity to glucagon-like peptides (GLP). They are GLP agonists and have been suggested (WO9524286) for treatment of diabetes and prevention of hyperglycaemia.

Query Match 91.8%; Score 212; DB 30; Length 39;  
Best Local Similarity 93.3%; Pred. No. 1.06e-10; Indels 0; Gaps 0;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsdgtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
SQ Sequence 39 AA;

**RESULT 11**

Best Local Similarity 93.3%; Pred. No. 1.06e-10;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsdgtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
SQ Sequence 39 AA;

Query Match 91.8%; Score 212; DB 34; Length 39;

Best Local Similarity 93.3%; Pred. No. 1.06e-10;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsdgtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
SQ Sequence 39 AA;

Query Match 91.8%; Score 212; DB 34; Length 39;

Best Local Similarity 93.3%; Pred. No. 1.06e-10;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsdgtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
SQ Sequence 39 AA;

Query Match 91.8%; Score 212; DB 39;

Best Local Similarity 93.3%; Pred. No. 1.06e-10;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsdgtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
SQ Sequence 39 AA;

**RESULT 12**

Best Local Similarity 93.3%; Pred. No. 1.06e-10;

Matches 28; Conservative 2; Mismatches 0;

Db 1 hsdgtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
Qy 1 hgegtftsdiskqmeeavrfliewlkngg 30  
|||:|||||:  
SQ Sequence 39 AA;

AC W39309; 05-JUN-1998 (first entry)  
 DT H. horridum exendin-4 peptide derivative #6.  
 DE Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
 KW glucagon reduction; hypoglycaemia; glucose; treatment.  
 OS Heloderma horridum.

## Key

## Location/Qualifiers

FT Modified\_site 30 "C-terminal amide"  
 FT W09746584-A1.

PN W09746584-A1. /note= "C-terminal amide"

PS DR 98-042119/04.

PI Truncated versions of exendin peptide(s) for treating diabetes -

CC increase secretion and biosynthesis of insulin, but reduce those of

CC glucagon, and do not induce hypoglycaemia

CC Claim 2; Page 22; 150pp; English.

CC Peptides W39303-W39420 are fragments of exendin-3 and exendin-4 isolated from Heloderma horridum which are used in a novel method for the treatment of diabetes mellitus. These Peptides can stimulate

CC biosynthesis and secretion of insulin, but have the opposite effect on CC glucagon, and independent of this activity can increase peripheral blood

CC glucose utilisation. Exendin-3 and exendin-4 are only active when blood sugar levels are high, so they will not induce hypoglycaemia. Compared

CC with Glucagon-like peptide 1 (GLP1) and the known exendins, they are more

CC active (effective at lower doses), more stable to degradation and CC metabolism and have a longer lasting effect. Truncated forms of this

CC peptide can be made more economically than full length versions.

SQ Sequence 30 AA;

DB 1 heggfttsdlskmeeearvrliewlkq 29

QY 1 heggfttsdlskmeeearvrliewlkq 29

Query Match 13  
 Best Local Similarity 96 %;  
 Matches 28; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

DB 1 heggfttsdlskmeeearvrliewlkq 29

QY 1 heggfttsdlskmeeearvrliewlkq 29

RESULT 13  
 ID W61172; standard; Peptide; 28 AA.  
 AC W61172;  
 DT 29-MAR-1999 (first entry)  
 DE Exendin-4 (1-28) amide for use in treating disorders related to food.  
 KW Exendin; obesity; type II diabetes; eating disorders; cardiac disease;  
 KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 SQ Heloderma suspectum.

## Key

## Location/Qualifiers

FT Modified\_site 28 "the C-terminal is in amide form"

FT W09830231-A1.

PD 16-JUL-1998.

PF 07-JAN-1998; US-00449.

PR 14-NOV-1997; US-066029.

PR 07-JAN-1997; US-034905.

PR 08-AUG-1997; US-055404.

PR 14-NOV-1997; US-065442.

PA (AMYL-) AMYLIN PHARM INC.

PT Beeley, N.R.A., Bhavsar, S., Prickett, K.S.;

DR WPI; 98-398796/34.

PT Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, eating disorders and insulin resistance.

PT Claims 18, 26; Page 12; 214pp; English.

PS The invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment

CC reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer lasting action (still effective after 6 hours in a mouse model).  
 CC The present sequence is that of exendin-4 (1-28) amide which is one of the preferred compounds for use in the method.  
 CC Sequence 28 AA;  
 SQ

Query Match 30 "the C-terminal is in amide form"

Best Local Similarity 100.0%;  
 Matches 28; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

DB 1 heggfttsdlskmeeearvrliewlkq 28

QY 1 heggfttsdlskmeeearvrliewlkq 28

RESULT 14  
 ID W39368 standard; peptide; 30 AA.

AC W39368; 05-JUN-1998 (first entry)

DE H. horridum exendin-3 peptide derivative #11.

KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;

OS Heloderma horridum.

Key Location/Qualifiers

FT Modified\_site 30 "the C-terminal amide"

PN W09745584-A1.

PD 11-DEC-1997.

PF 05-JUN-1997; E02930.

PR 13-SEP-1996; DE-037230.

PR 05-JUN-1996; DE-022502.

PA (BOEFL ) BOEFLINGER MANNHEIM GMBH.

PI Goek, B., Goek, R., Hoffmann, E.;

DR WPI; 98-042119/04.

PT Truncated versions of exendin peptide(s) for treating diabetes - increase secretion and biosynthesis of insulin, but reduce those of glucagon, and do not induce hypoglycaemia

CC Claim 2; Page 22; 150pp; English.

CC Peptides w39303-W39420 are fragments of exendin-3 and exendin-4 isolated from Heloderma horridum which are used in a novel method for the treatment of diabetes mellitus. These Peptides can stimulate biosynthesis and secretion of insulin, but have the opposite effect on glucagon, and independent of this activity can increase peripheral

CC glucose utilisation. Exendin-3 and exendin-4 are only active when blood

CC sugar levels are high, so they will not induce hypoglycaemia. Compared

CC with Glucagon-like peptide 1 (GLP1) and the known exendins, they are more

CC active (effective at lower doses), more stable to degradation and

CC metabolism and have a longer lasting effect. Truncated forms of this

CC peptide can be made more economically than full length versions.

SQ Sequence 30 AA;

DB 1 heggfttsdlskmeeearvrliewlkq 29

QY 1 heggfttsdlskmeeearvrliewlkq 29

Query Match 15  
 Best Local Similarity 91.1%;  
 Matches 27; Conservative 2; Mismatches 0; Indels 0; Gaps 0;

DB 1 heggfttsdlskmeeearvrliewlkq 29

QY 1 heggfttsdlskmeeearvrliewlkq 29

RESULT 15  
 ID W39401 standard; peptide; 30 AA.

AC W39401; 05-JUN-1998 (first entry)

DE H. horridum exendin-3 peptide.

KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;

OS Heloderma horridum.

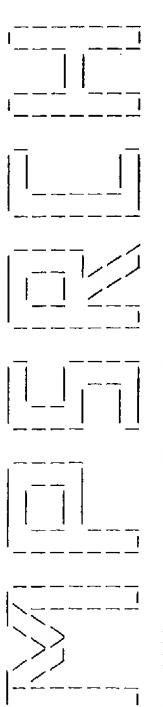
Key Location/Qualifiers

FT Modified\_site 30 "the C-terminal is in amide form"

FT Gly

/note= "This residue can be any amino acid except Gly"



\*\*\*\*\*  
  
 \*\*\*\*\*

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MPSrch\_PP protein - protein database search, using Smith-Waterman algorithm  
 Run on: Mon Oct 4 15:25:48 1999; MasPar time 6.68 Seconds  
 185.964 Million cell updates/sec  
 Pular output not generated.

Title: >MOHAM-312-CLAIM82B.PEP  
 Description: (1-31) from moham312177.pep  
 Perfect Score: 231  
 Sequence: 1 hgsgfttsdlskmeeearvrlfiewlkqgy 31

Scoring table: PAM 150  
 Gap 11

Searched: 122810 segs, 40068593 residues

Post-processing: Minimum Match 0%  
 Listing first 45 summaries

Statistics: Mean 34.253; Variance 64.514; scale 0.531

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query	Match	Length	ID	Description	Pred. No.
1	219	94.8	39	1	HWG4G		
2	212	91.8	39	1	HWG3Z		
3	127	55.0	31	2	S44472		
4	124	53.7	101	1	GCFGB		
5	122	52.8	30	2	S44473		
6	122	52.8	31	2	S44471		
7	121	52.4	30	2	C61125		
8	121	52.4	30	2	B61125		
9	120	51.9	63	1	GCIDC		
10	120	51.9	66	2	151093		
11	120	51.9	178	2	151058		
12	120	51.9	178	2	151057		
13	119	51.5	72	1	GCGXA		
14	118	51.1	122	1	GCAF2		
15	117	50.6	60	1	GOONC		
16	115	49.8	29	1	GCDF		
17	115	49.8	158	1	GCPG		
18	115	49.8	180	2	A57294		
19	115	49.8	180	1	GCHY		
20	115	49.8	180	1	GCRTDU		
21	115	49.8	180	1	GOBO		
22	115	49.8	180	1	GCPGP		
23	115	49.8	180	1	GCHU		

glucagon precursor - 4.16e-06  
 glucagon precursor - 6.11e-06  
 glucagon precursor - 6.11e-06  
 proglucagon - chicken 206 1 GCCH  
 glucagon 1 Precursor 206 2 I51301  
 glucagon - Chinchorilla 124 1 GCAF  
 glucagon - marbled el 29 1 GCB  
 glucagon - European f 29 2 S07211  
 glucagon - bigeye tun 30 1 GCFUB  
 glucagon - common squ 31 1 A61135  
 glucagon - dog 32 1 GCFIS  
 glucagon - elephantfi 33 1 A91742  
 glucagon - Arabica ca 34 1 A91741  
 glucagon - rabbit (te 35 1 C39258  
 glucagon - common squ 36 1 GCD659  
 glucagon - bowfin 37 1 S39018  
 glucagon - elephantfi 38 1 GCEN  
 glucagon I - European 39 1 C60840  
 glucagon - North Amer 40 1 GCOPY  
 glucagon - turkey (te 41 1 A91740  
 glucagon - ostrich 42 1 A61583  
 glucagon - slider tur 43 1 GCITS  
 glucagon - duck 44 1 GCDK  
 glucagon-36 - spotted 45 1 GCFI

ALIGNMENTS

RESULT 1 HWG4G #type complete  
 ENTRY exendin-4 - Gila monster  
 TITLE #common\_name Gila monster  
 ORGANISM #sequence\_change  
 DATE 31-Mar-1993 #text\_change

21-Nov-1997

ACCESSIONS A42486  
 REFERENCE Eng, J.; Kleinman, W.A.; Singh, L.; Raufman, J.P.  
 #authors J. Biol. Chem. (1992) 267:7402-7405  
 #journal Isolation and characterization of exendin-3  
 #title analogue, from Helodema suspectum venom. Further evidence  
 for an exendin receptor on dispersed acini from guinea pig  
 pancreas.  
 #cross-references MUID:92218391  
 #accession A42486  
 #molecule\_type Protein  
 #residues 1-39 #label ENG

COMMENT Exendin-4 does not stimulate amylase secretion by pancreatic acinar cells.

CLASSIFICATION #superfamily glucagon  
 KEYWORDS #modified\_site amidated carboxyl end; duplication; venom  
 FEATURE #modified\_carboxyl end; experimental  
 #length 39 #molecular\_weight 4188 #checksum 9570  
 SUMMARY #length 39 #checksum 9570

Query Match 94.8%; Score 2.9; DB 1; Length 39;  
 Best Local Similarity 100.0%; Pred. No. 2, 37e-25;  
 Matches 30; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Db 1 HGGTGTSDLSKOMEERAVRLFIEWLKNGG 30  
 ||||| ||||| ||||| ||||| ||||| |||||  
 Qy 1 hgegtftsdlskomeeravrlfiewlkngg 30

RESULT 2 HWGH3Z #type complete  
 ENTRY exendin-3 - Mexican beaded lizard  
 TITLE #common\_name Heloderma horridum #text\_change  
 ORGANISM 1 lizard  
 DATE 31-Mar-1993 #sequence\_change

21-Nov-1997

ACCESSIONS A23674  
 REFERENCE Eng, J.; Andrews, P.C.; Kleinman, W.A.; Singh, L.; Raufman, J.P.  
 #authors



DATE 18-Sep-1997 #sequence\_revision 18-Sep-1997 #text\_change  
20-Mar-1998

ACCESSIONS S44471  
REFERENCE S44467  
#authors Nguyen, T.M.; Moomsen, T.P.; Mims, S.M.; Conlon, J.M.  
#journal Biochem. J. (1994) 300:339-345  
#title Characterization of insulin and proglucagon-derived peptides from a phylogenetically ancient fish, the paddlefish (*Polyodon spathula*).  
#accession S44471  
#molecule-type Protein  
##residues 1-31 ##label NGU  
#experimental-source Pancreas  
#superfamily Glucagon  
#carbohydrate metabolism; duplication; hormone; pancreas  
#KEYWORDS FEATURE 1-31  
#SUMMARY #product glucagon G1 #status predicted #label MAT  
#length 31 #molecular-weight 3751 #checksum 7808  
Query Match Score 52.8%; Pred. No. 2 73e-07;  
Best Local Similarity 55.2%; Pred. No. 2 73e-07;  
Matches 16; Conservative 6; Mismatches 7; Indels 0; Gaps 0;  
QY 1 HSQGMFTNDSYKLEERKRAKEFVWIKNG 29  
1 :||:||:||:||:||:||:||:||:||:||:||:  
1 hgegtfsdskqmeeaevrliewlkng 29  
:

RESULT 7  
ENTRY C61125  
TITLE #type complete  
ORGANISM glucagon-like peptide - European eel  
#formal\_name Anguilla #common\_name European eel  
DATE 21-Nov-1997  
ACCESSIONS C61125  
REFERENCE A61125  
#authors Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.  
#journal Gen. Comp. Endocrinol. (1991) 82:23-32  
#title The primary structure of glucagon-like peptide but not insulin has been conserved between the American eel, Anguilla rostrata and the European eel, Anguilla anguilla.  
#cross-references MUID:91340068  
#accession C61125  
#molecule-type Protein  
##residues 1-30 ##label CON  
#superfamily Glucagon  
#carbohydrate metabolism; duplication  
#KEYWORDS FEATURE 1-30  
#product glucagon-like peptide #status experimental  
#label GLP\_\\_ 30  
#modified site amidated carboxyl end (Arg) #status experimental  
#length 30 #molecular-weight 3376 #checksum 6092  
#SUMMARY #product glucagon-like peptide #status experimental  
#label GLP\_\\_ 30  
#modified site amidated carboxyl end (Arg) #status experimental  
#predicted #length 30 #molecular-weight 3376 #checksum 6092  
Query Match Score 121; DB 2; Length 30;  
Best Local Similarity 48.3%; Pred. No. 4.05e-07;  
Matches 14; Conservative 9; Mismatches 6; Indels 0; Gaps 0;  
DB 1 HAEGTTSVDSSYLDQDAKEFVWIKTG 29  
|:||:||:||:||:||:||:||:||:  
QY 1 hgegtfsdskqmeeaevrliewlkng 29  
:

RESULT 9  
ENTRY GC1C  
TITLE #type fragments  
ORGANISM glucagon precursor - channel catfish (fragments)  
#formal\_name Ictalurus punctatus #common\_name channel catfish  
DATE 31-Mar-1993 #sequence\_revision 31-Mar-1993 #text\_change  
ACCESSIONS A92214  
REFERENCE Andrews, P.C.; Ronner, P.  
#authors J. Biol. Chem. (1985) 260:3910-3914  
#journal Isolation and structures of glucagon and glucagon-like peptide from channel catfish pancreas.  
#cross-references MUID:85157536  
#accession A05166  
#molecule-type Protein  
##residues 1-29 ##label AND1  
#accession A05167  
#molecule-type Protein  
##residues 1-29 ##label AND2  
#molecule-type Protein  
##residues 30-63 ##label AND2  
#KEYWORDS FEATURE 1-29  
#product glucagon #status experimental #label GCN  
#label GLI 30-63  
#product glucagon-like peptide 1 #status experimental  
#label GLI  
#length 63 #checksum 9366  
#SUMMARY #product glucagon  
#length 63 #checksum 9366  
Query Match Score 120; DB 1; Length 63;  
Best Local Similarity 48.3%; Pred. No. 5.99e-07;  
Matches 14; Conservative 10; Mismatches 5; Indels 0; Gaps 0;  
DB 30 HADGTTSVDSSYLDQDAKEFVWIKSG 8  
|:||:||:||:||:||:||:||:  
QY 1 hgegtfsdskqmeeaevrliewlkng 29  
:

RESULT 10  
ENTRY I51093  
TITLE #type fragment  
ORGANISM glucagon - chinook salmon (fragment)  
#formal\_name Oncorhynchus tshawytscha #common\_name chinook salmon  
DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
ACCESSIONS I51093  
REFERENCE A55395  
#authors Irwin, D.M.; Wong, J.  
#journal Mol. Endocrinol. (1995) 9:267-277  
#title Trout and chicken Proglucagon: alternative splicing generates

mrNA transcripts encoding glucagon-like peptide 2.  
 #cross-references MUID:95295739  
 #accession I51093  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type mRNA  
 ##residues 1-66 #!label IRW  
 ##cross-references EMBL:U19920; NID:9736366; PID:9736367  
 CLASSIFICATION #superfamily glucagon  
 KEYWORDS duplication  
 SUMMARY #length 66 #checksum 1440

Query Match 51.9%; Score 120; DB 2; Length 66;  
 Best Local Similarity 44.8%; Pred. No. 5.99e-07; Indels 0; Gaps 0;  
 Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;

Db 33 HADGTTYSDVSTYLDQQAAKDFVSWLKSG 61  
 :|:||:||:| :::| :| :||:|  
 1 hgegtftsdlskqmeeaavrifiewlkng 29

RESULT 11  
 ENTRY I51058 #type complete  
 TITLE glucagon I precursor - rainbow trout  
 ORGANISM #formal\_name Oncorhynchus mykiss #common\_name rainbow trout  
 DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
 21-Nov-1997

ACCESSIONS I51058; I51299; I51056; I51037; I51036; I51300  
 SOURCE A55855  
 #authors Irwin, D.M.; Wong, J.  
 Mol. Endocrinol. (1995) 9:267-277  
 #journal Trout and chicken proglucagon: alternative splicing generates  
 mRNA transcripts encoding glucagon-like peptide 2.  
 #title mRNA transcripts encoding glucagon-like peptide 2.  
 #cross-references MUID:95295739  
 #accession I51058  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type mRNA  
 ##residues 1-178 #!label IRW  
 ##cross-references EMBL:U19917; NID:9736364; PID:9736365; GB:S78475;  
 #accession I51299  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type mRNA  
 ##residues 52-'X' 55-123 #!label IR2  
 ##cross-references GB:S78473; NID:999382; PID:999383  
 #accession I51056  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type mRNA  
 ##residues 58-123 #!label IR3  
 ##cross-references EMBL:U19913; NID:9736360; PID:9736361  
 #accession I51037  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 'M' 114-144 #!label IR4  
 ##cross-references EMBL:U19919; NID:9736374; PID:9736377  
 #accession I51036  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 113-123 #!label IR5  
 ##cross-references EMBL:U19918; NID:9736373; PID:9736376  
 GENETICS # introns 123/2  
 CLASSIFICATION #superfamily glucagon  
 SUMMARY #length 178 #molecular-weight 20034 #checksum 5250

Query Match 51.9%; Score 120; DB 2; Length 178;  
 Best Local Similarity 44.8%; Pred. No. 5.99e-07; Indels 0; Gaps 0;  
 Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;

Db 90 HADGTTYSDVSTYLDQQAAKDFVSWLKSG 118  
 :|:||:||:| :::| :| :||:|  
 1 hgegtftsdlskqmeeaavrifiewlkng 29

RESULT 12  
 ENTRY I51057 #type complete  
 TITLE glucagon II precursor - rainbow trout  
 ORGANISM #formal\_name Oncorhynchus mykiss #common\_name rainbow trout  
 DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
 21-Nov-1997

ACCESSIONS I51057; I51038  
 #authors Irwin, D.M.; Wong, J.  
 Mol. Endocrinol. (1995) 9:267-277  
 #journal Trout and chicken proglucagon: alternative splicing generates  
 mRNA transcripts encoding glucagon-like peptide 2.  
 #cross-references MUID:9529739  
 #accession I51057  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 113-144 #!label IR2  
 ##cross-references EMBL:U19916; NID:9736369; PID:9736372  
 #accession I51038  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type mRNA  
 ##residues 1-178 #!label IRW  
 ##cross-references EMBL:U19914; NID:9736362; PID:9736363  
 #accession I51039  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 113-144 #!label IR2  
 ##cross-references EMBL:U19916; NID:9736369; PID:9736372  
 #accession I51038  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 113-123 #!label IR3  
 ##cross-references EMBL:U19915; NID:9736368; PID:9736371  
 GENETICS # introns 123/2  
 CLASSIFICATION #superfamily glucagon  
 KEYWORDS SUMMARY #length 178 #molecular-weight 19998 #checksum 4464  
 #accession I51058  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 113-123 #!label IR2  
 ##cross-references EMBL:U19917; NID:9736364; PID:9736365; GB:S78475;  
 #accession I51299  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 52-'X' 55-123 #!label IR2  
 ##cross-references GB:S78473; NID:999382; PID:999383  
 #accession I51056  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 58-123 #!label IR3  
 ##cross-references EMBL:U19913; NID:9736360; PID:9736361  
 #accession I51037  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 'M' 114-144 #!label IR4  
 ##cross-references EMBL:U19919; NID:9736374; PID:9736377  
 #accession I51036  
 ##status preliminary; translated from GB/EMBL/DDBJ  
 ##molecule\_type DNA  
 ##residues 113-123 #!label IR5  
 ##cross-references EMBL:U19918; NID:9736373; PID:9736376  
 GENETICS # introns 123/2  
 CLASSIFICATION #superfamily glucagon  
 SUMMARY #length 178 #molecular-weight 20034 #checksum 5250

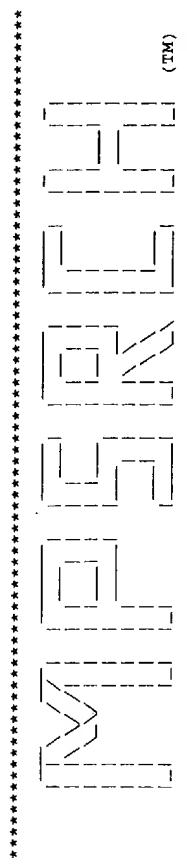
Query Match 51.9%; Score 120; DB 2; Length 178;  
 Best Local Similarity 44.8%; Pred. No. 5.99e-07; Indels 0; Gaps 0;  
 Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;

Db 90 HADGTTYSDVSTYLDQQAAKDFVSWLKSG 118  
 :|:||:||:| :::| :| :||:|  
 1 hgegtftsdlskqmeeaavrifiewlkng 29

COMMENT X's at positions 37-38 represent a pair of basic amino acids forming a cleavage site.

CLASSIFICATION #superfamily glucagon  
 KEYWORDS FEATURE





Release 3.1A John F. Collins, Biocomputing Research Unit.

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MPSrch\_PP protein - Protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:24:52 1999; MasPar time 3.93 Seconds

222.856 Million cell updates/sec  
Tabular output not generated.

## Title:

>MOHAM-312-CLAIM82B.PEP  
(1-31) from moham312177.pep

## Perfect Score:

231

## Sequence:

1 h-e-g-t-f-t-s-d-k-g-m-e-e-a-v-r-l-f-e-w-l-k-n-g-y 31

## Scoring table:

PAM 150

## Gap 11

## Searched:

77977 seqs, 28268293 residues

## Post-processing: Minimum Match 0%

Listing first 45 summaries

## Database:

swissProt37

1:swissprot

## Statistics:

Mean 35.168; Variance 58.938; scale 0.597

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

## Result No.

## Score

## Query

## Match

## Length

## DB ID

## Description

## Pred. No.

## Description

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GLUCAGON\_PLAPE

GLUCAGON PRECURSOR (FR

3.70e-05

3.70e-05

GLUCAGON

GLUC\_RABBIT

1.87e-04

GLUC\_CANFA

1.87e-04

GLUC\_CALMI

2.79e-04

GLUC\_AMICA

2.79e-04

GLUCAGON\_I.

4.16e-04

GLUC\_DITMA

4.16e-04

GLUCAGON.

6.40e-03

GLUC\_HYDRO

6.40e-03

RNA POLYMERASE BETA SU

2.00e-02

RNA POLYMERASE BETA SU

2.00e-02

YBDN\_ECOLI

2.61e-01

EXCINUCLEASE ABC SUBTUN

2.61e-01

UVPR\_HELPY

3.73e-01

VASOACTIVE INTESTINAL

3.73e-01

VIP\_HUMAN

5.31e-01

GASTRIC INHIBITORY POL

5.31e-01

GIP\_BOVIN

5.31e-01

GASTRIC INHIBITORY POL

5.31e-01

GIP RAT

5.31e-01

GIP\_HUMAN

5.31e-01

GASTRIC INHIBITORY POL

5.31e-01

SECRETIN PRECURSOR

7.53e-01

ENOLASE (EC 4.2.1.11)

7.53e-01

## ALIGNMENTS

## RESULT

## ID EXE4\_HELSU

## STANDARD;

## PRT;

## 87 AA.

## ID P2634;

## CREATED)

## DT 01-MAY-1992 (REL.

## 22,

## LAST SEQUENCE UPDATE)

## DT 15-JUL-1998 (REL.

## 36,

## LAST ANNOTATION UPDATE)

## DE EXENDIN-4 PRECURSOR.

## OS HELODERMA SUSPECTUM (GILA MONSTER).

## OC EUKAROTIA; NEUTROPA; CHORDATA; LEPIDOSAURIA; SQUAMATA;

## SCLEROGLOSSA; ANGUTIMORPHA; HELODERMATIDE; HELODERMA.

## RN [1]

## SEQUENCE FROM N.A.

## RA CHEN Y.E., DRUCKER D.J.;

## SUBMITTED (APR-1997) TO EMBL/GENBANK/DDJB DATA BANKS.

## RN [2]

## SEQUENCE OF 48-86.

## RC TISSUE-VENOM;

## MEDLINE; 92219391.

## RA "EXENDIN-4 PROTEIN BELONGS TO THE GLUCAGON FAMILY.

## RA "ISOLATION AND CHARACTERIZATION OF EXENDIN-4, AN EXENDIN-3 ANALOGUE, FROM HELODERMA SUSPECTUM VENOM. FURTHER EVIDENCE FOR AN EXENDIN RECEPTOR."

## RA "RECEPTOR ON DISPERSED ACTIN FROM GUINEA PIG PANCREAS."

## RA "FUNCTION: HAS A VIP/SECRETIN-LIKE BIOLOGICAL ACTIVITY. INTERACTS WITH THE EXENDIN RECEPTOR."

## CC "- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

CC "THIS SWISS-PROT ENTRY IS COPYRIGHT. IT IS PRODUCED THROUGH A COLLABORATION BETWEEN THE SWISS INSTITUTE OF BIOMINFORMATICS AND THE EMBL OUTSTATION - THE EUROPEAN BIOINFORMATICS INSTITUTE. THERE ARE NO RESTRICTIONS ON ITS USE BY NON-PROFIT INSTITUTIONS AS LONG AS ITS CONTENT IS IN NO WAY MODIFIED AND THIS STATEMENT IS NOT REMOVED. USAGE BY AND FOR COMMERCIAL ENTITIES REQUIRES A LICENSE AGREEMENT (SEE [HTTP://WWW.ISB-SIB.CH/ANNOUNCE/](http://www.isb-sib.ch/announce/) OR SEND AN EMAIL TO LICENSE@ISB-SIB.CH).

## CC "EMBL: U77613; G1916067; -

## DR PIR; A4246; HGG4.

## DR PROSITE; PS00250; GLUCAGON; 1.

## DR PFAM; PF00123; hormone2; 1.

## RW GLUCAGON FAMILY; VENOM; AMIDATION; SIGNAL.

## FT SIGNAL 1 23 POTENTIAL.

## FT PEPTIDE 48 86 EXENDIN-4.

## FT MOD\_RES 86 86 AMIDATION (G-87 PROVIDE AMIDE GROUP).

## FT SEQUENCE 87 AA; 9479 MW; 6C1AFDF3 CRC32;

## Query Match 94.8%; Score 219; DB 1; Length 87;

## Best Local Similarity 100.0%; Pred. No. 1.37e-28;

## Page 1



- X/S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN  
 GOOSEFISH SEQUENCES.  
 -  
 - SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
 DR PIR; S06339; GCGXA.  
 PROSITE; PS00260; GLUCAGON; 2.  
 DR PFAM; PF00123; hormone2; 2.  
 HSSP; P01274; 1GNN.  
 GLUCAGON FAMILY; HORMONE.  
 FT PEPTIDE 1 29 GLUCAGON.  
 FT PEPTIDE 1 36 GLUCAGON-36 (OXINTOMODULIN).  
 FT PEPTIDE 45 78 GLUCAGON-LIKE PEPTIDE.  
 SQ SEQUENCE 78 AA: 8990 MW: 509ED93 CRC32;  
 Query Match 51.5% Score 119; DB 1; Length 78;  
 Best Local Similarity 44.8% Pred. No. 6.70e-08;  
 Matches 13; Conservative 10; Mismatches 6; Indels 0; G  
 DE GLUCAGON II PRECURSOR.  
 OS EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII; TELEOSPI; EUTELEOSTEI; PARACANTHOPIBERYGII; LOPHIIFORMES; LOPHII.  
 OC LOPHIUS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE; 83135785.  
 RA LUND P.K.; GOODMAN R.H.; MONTMINY M.R.; DEE P.C.; HABENER J.F.;  
 RT "Anglerfish islet pre-proglucagon II. Nucleotide and correspondence"  
 RT amino acid sequence of the cDNA.";  
 RT BIOL. CHEM. 258:3280-3284 (1983).  
 RN [2]  
 RP PROCESSING.  
 RX MEDLINE; 86286913.  
 RA NO B.D.; ANDRENS P.C.;  
 RT "Specific glucagon-related peptides isolated from anglerfish islet  
 are metabolic cleavage products of (pre)proglucagon-II.";  
 RT PEPTIDES 7:331-339 (1986).  
 RL CC -1- FUNCTION: PROMOTES HYDROLYSIS OF GLICOGEN AND LIPIDS, AND RA  
 CC THE BLOOD SUGAR LEVEL.  
 CC -1- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHAAS.  
 CC -1- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
 CC -----  
 CC This SWISS-PROT entry is copyright. It is produced through a col  
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CC -----  
 DR V00632; G64022; -.  
 DR EMBL; J0933; G213353; -.  
 DR PIR; A05150; GCAF2.  
 DR PROSITE; PS00260; GLUCAGON; 2.  
 DR PFAM; PF00123; hormone2; 2.  
 DR HSSP; P01274; 1GNN.  
 GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SI  
 KW SIGNAL 1 21 GRPP (GLICENTINE RELATED POLYPEPTID  
 FT PEPTIDE 22 49 GLUCAGON II.  
 FT PEPTIDE 52 80 GLUCAGON-LIKE PEPTIDE III.  
 FT PEPTIDE 89 119 DEFGEGF3061  
 SQ SEQUENCE 122 AA: 14171 MW: 509ED93 CRC32;

Query Match 51.1%; Score 118; DB 1; Length 122;  
Best Local Similarity 44.8%; Pred. No. 1.0e-07;  
Matches 13; Conservative 10; Mismatches 6; Indels 0; Gaps 0;

Db 89 HADGTYTSDVSSYLODQAADKFVSLKAG 117  
Qy 1 hgegtfsdiskqmeavrliewlkng 29

RESULT 8 GLUC\_ONCKI STANDARD; PRT; 68 AA.  
ID P07449; DT 01-APR-1988 (REL. 07, CREATED)  
DT 01-NOV-1990 (REL. 16, LAST ANNOTATION UPDATE)  
DE GLUCAGON PRECURSOR (FRAGMENT)  
CC ONCERHYNCHUS KISUTCH (COHO SALMON).  
EUKARYOTA: METAZOA: CHORDATA: VERTEBRATA: ACTINOPTERYGII: NEOPTERYGII:  
OC TELEOSTEI: EUTELEOSTEI: PROTACANTHOPERTERYGII: SALMONIFORMES;  
RN [1]  
SEQUENCE RX PLISENSKAYA E., POLLACK H.G., ROUSE J.B., HAMILTON J.W., KIMMEL J.R.,  
RA GORBYAN A.;  
RT Isolation and structures of coho salmon (Oncorhynchus kisutch)  
RT glucagon and glucagon-like peptide.;  
RL REGUL. PEPT. 14:57-67(1986).  
CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.  
CC -!- INDUCTION: PRODUCED IN THE CELLS OF THE ISLETS OF LANGERHANS  
IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
CC -!- X-S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN  
GOOSEGLYCOLIC PEPTIDE SEQUENCES.  
CC -!- GLN-14 IS A UNIQUE SUBSTITUTION FROM LEUCINE IN OTHER KNOWN  
GLUCAGON SEQUENCES AND GLUCAGON-LIKE PEPTIDES.  
CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
UR PIR: JP0103; GCONC.  
DR PROSITE; PS00260; GLUCAGON; 2.  
DR PFAM; PF00123; hormone2; 2.  
DR HSSP; P01274; IGCN  
KW GLUCAGON FAMILY; HORMONE.  
RN PEPTIDE 1 1 GLUCAGON.  
RN PEPTIDE 38 68 GLUCAGON-LIKE PEPTIDE.  
RN NON-TER 68 68

Query Match 50.6%; Score 117; DB 1; Length 68;  
Best Local Similarity 41.4%; Pred. No. 1.59e-07;  
Matches 12; Conservative 12; Mismatches 5; Indels 0; Gaps 0;

Db 38 HADGTYTSDVSSYLODQAADKFVSLKSG 66  
Qy 1 hgegtfsdiskqmeavrliewlkng 29

RESULT 9 GLUC\_SCYCA STANDARD; PRT; 29 AA.  
ID P09687; DT 01-MAR-1989 (REL. 10, CREATED)  
DT 01-JAN-1989 (REL. 10, LAST ANNOTATION UPDATE)  
DE GLUCAGON.  
OS SCYLLOTRHINUS CANICULA (SPOTTED CATSHARK).  
EUKARYOTA: METAZOA: CHORDATA: VERTEBRATA: CHONDRICHTHYES;  
OC ELASMOBRANCHII: CARCHARHINIFORMES: SCYLLOTRHINUS.  
RN [1]  
RP SEQUENCE.  
RC TISSUE=PANCREAS;  
RX MEDLINE; 87190953.  
RA CONLON J.M., O'TOOLE L., THIM L.;

RT "Primary structure of glucagon from the gut of the common dogfish  
RT (*Scylliorhinus canicula*).";  
RT FBBS LETT. 214:50-56(1987).  
CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.  
CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
CC PIR; A26992; GCFD.  
DR PROSITE; PS00260; GLUCAGON; 1.  
DR PFAM; P00123; hormone2; 1.  
DR HSSP; P01274; IGCN.  
KW GLUCAGON FAMILY; HORMONE.  
SQ SEQUENCE 29 AA; 3529 MW; 8CFE41FB CRC32;  
PRT: 158 AA.  
Score 49.8%; Length 29;  
Best Local Similarity 53.6%; Pred. No. 3.73e-07;  
Matches 15; Conservative 7; Mismatches 6; Indels 0; Gaps 0;  
DB 1 HSEGFTSDSYKDMNRRAKDFYQMLN 28  
Qy 1 hgegtfsdiskqmeavrliewlkng 28

RESULT 10 ID GLUC\_FIG STANDARD; PRT; 158 AA.  
AC P01274;  
AC P01274;  
DT 21-JUL-1986 (REL. 01, CREATED)  
DT 01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)  
DE 15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)  
DE GLUCAGON PRECURSOR (FRAGMENT).  
GN GCG.  
OS SCROFA (PIG).  
CC EUKARYOTA; METIZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;  
OC ARTIOACTYLIA; SUIFORMES; SUINA; SUIDAE; SUS.  
RN [1]  
RP SEQUENCE.  
RX MEDLINE; 81248172.  
RA THIM L.; MOODY A.J.;  
RT "The primary structure of porcine glicentin (proglucagon).";  
RL REGUL. PEPT. 2:139-150(1981).  
RN [2]  
RP SEQUENCE.  
RX MEDLINE; 822221776.  
RA THIM L.; MOODY A.J.;  
RT "The amino acid sequence of porcine glicentin.";  
RL PEPTIDES 2 SUPPL. 2:37-39(1981).  
RN [3]  
RP SEQUENCE OF 33-61.  
RA BROMER W.W., STINN L.G., BEHRENS O.K.;  
RT "The amino acid sequence of glucagon. V. Location of amide groups,  
RT acid degradation studies and summary of sequential evidence.";  
RL J. AM. CHEM. SOC. 79:2807-2810(1957).  
RN [4]  
RP SEQUENCE OF 78-107.  
RX MEDLINE; 89322738.  
RA ORSKOV C., PERSSANT M., JOHNSEN A.H., HOEJERUP P., HOLST J.J.;  
RT "Complete sequences of glucagon-like peptide-1 from human and pig  
RT small intestine.";  
RL J. BIOL. CHEM. 264:12826-12829(1989).  
RN [5]  
RP SEQUENCE OF 111-158.  
RX MEDLINE; 88245712.  
RA BUHL T., THIM L., KOFOD H., ORSKOV C., HARLING H., HOLST J.J.;  
RT "Naturally occurring products of proglucagon 111-160 in the porcine  
RT and human small intestine.";  
RL J. BIOL. CHEM. 263:8621-8624(1988).  
RN [6]  
RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).  
RX MEDLINE; 76051297.  
RA SASAKI K., DOCKERILL S., ADAMIAK D.A., TICKLE I.J., BLUNDELL T.L.;  
RT "X-ray analysis of glucagon and its relationship to receptor  
binding.";

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CC DR K02813; G204370; - .  
 CC EMBL; K02809; G204370; JOINED.  
 CC EMBL; K02810; G204370; JOINED.  
 CC EMBL; K02811; G204370; JOINED.  
 CC EMBL; K02812; G204370; JOINED.  
 CC PIR; A22655; GCRIT.  
 CC PIR; A44198; A44198.  
 CC PROSITE; PS00260; GLUCAGON; 4.  
 CC DR PFAM; PF00123; hormone2; 3.  
 CC DR HSSP; P01274; IGEN.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.  
 FT SIGNAL 1 20  
 FT PEPTIDE 21 50 GRPP (GLUTAMINE RELATED POLYPEPTIDE).  
 FT PEPTIDE 53 81 GLUCAGON.  
 FT PEPTIDE 92 128 GLUCAGON-LIKE PEPTIDE 1.  
 FT PEPTIDE 146 178 GLUCAGON-LIKE PEPTIDE 2.  
 FT PEPTIDE 180 AA; 20846 MN; 355C3843 CRC32; SQ

Query Match 49.8% Score 115; DB 1; Length 180;  
 Best Local Similarity 55.2%; Pred. No. 3 73e-07;  
 Matches 16; Conservative 6; Mismatches 7; Indels 0; Gaps 0;

Db 98 HAGGTETSDVSYYLEGAAKEPIIAWVKG 126  
 Qy :|||||||:| :| :| ||| :| :| :| :| :| :| hgegttsdskqmeeeavrifewkg 29

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RESULT 12 STANDARD PRT; 180 AA.

ID	GIJC_OCTDE	PRT
AC	P22890;	
DT	01-AUG-1991 (REL. 19, CREATED)	
DT	01-AUG-1991 (REL. 19, LAST SEQUENCE UPDATE)	
DT	01-JUL-1993 (REL. 26, LAST ANNOTATION UPDATE)	
DE	GLUCAGON PRECURSOR.	
OS	OCTODON DEGENS (DEGU).	
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;	
OC	RODENTIA; HYSTRICOGNATHI; OCTODONTIDAE; OCTODON.	
RN	[1]	
RP	SEQUENCE FROM N.A.	
RX	MEDLINE; 91155952.	
RA	NISHI M., STEINER D.F.;	
RT	"Cloning of complementary DNAs encoding islet amyloid polypeptide, insulin, and glucagon precursors from a New World rodent, the degu, Octodon degus.";	
RL	MOL-ENDOCRINO; 4:1192-1198(1990).	
CC	-!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	
CC	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.	
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	
CC	SEQUENCE FROM N.A.	
DR	M57688; G202466; - .	
DR	PIR; C3611B; GCRDU.	
DR	PROSITE; PS00260; GLUCAGON; 4.	
DR	PFAM; PF00123; hormone2; 3.	
DR	HSSP; P01274; IGEN.	
DR	SECPROT; SECPROT; 1.	

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RESULT: 13  
 GLUCOMOUSE STANDARD; PRF; 180 AA.  
 P55095;  
 01-OCT-1996 (REL. 34, CREATED)  
 01-OCT-1996 (REL. 34, LAST SEQUENCE UPDATE)  
 01-OCT-1998 (REL. 36, LAST ANNEXATION UPDATE)  
 GLUCAGON PRECURSOR.  
 GCG.  
 MUS MUSCULUS (MOUSE).  
 EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;  
 MURIDAE; MURINAE; MUS.  
 [1]  
 SEQUENCE FROM N.A.  
 TISSUE= PANCREATIC ISLETS;  
 MEDLINE; 95247722.

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EMBL: Z46345; G59988; -.  
 MGD: MGI:95674; GCG.  
 PROSITE: PS00260; GLUCAGON; 4.  
 PFAM: PF00123; hormone2; 3.  
 HSSP: P01274; 1GCR.  
 GLUCAGON FAMILY: HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.  
 SIGNAL 1 20 BY SIMILARITY.  
 PEPTIDE 21 50 GRPP (GLICENTINE RELATED POLYPEPTIDE).  
 PEPTIDE 53 82 GLUCAGON.  
 PEPTIDE 92 128 GLUCAGON-LIKE PEPTIDE 1.  
 PEPTIDE 146 178 GLUCAGON-LIKE PEPTIDE 2.  
 PEPTIDE 180 210  
 PEPTIDE 211 240  
 PEPTIDE 241 270  
 PEPTIDE 271 300

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DR EMBL; X00107; GL163082; -.

DR PIR; A01538; GBBO.

DR PROSTTE; PS00260; GLUCAGON; 4.

DR PEAM; P00123; hormone; 3.

DR HSSP; P01274; IGCN.

KW GLUCAGON FAMILY; HORMONE;

SIGNAL PEPTIDE

FT SIGNAL	FT PEPTIDE				
1	1	21	53	92	146
20	50	81	128	128	178

GLYCINE RELATED POLYPEPTIDE 1.

GLUCAGON.

GLUCAGON-LIKE PEPTIDE 1.

GLUCAGON-LIKE PEPTIDE 2.

SQ	SEQUENCE	180 AA:	20944 MW:	34640341 CRC32:
	Query Match	49.8%	Score 115; DB 1;	Length 180;
	Best Local Similarity	55.2%	Pred. No. 3.73e-07;	
	Matches	16;	Mismatches 6;	Indels 0;
	Conservative		Gaps 0;	
Ddb	98	HAGETFTSDVSSYLEGAAKTFIAWLYKG	126	
	:	: :   :   :   :   :   :   :   :   :		
QY	1	hgeftftsdlskqmeeeeavrfiewlkng	29	
 RESULT				
ID	GLUC_HUMAN	STANDARD:	PRT:	180 AA.
AC	P01275;			
DT	21-JUL-1986	(REL. 01,	CREATED)	
DT	13-AUG-1987	(REL. 05,	LAST SEQUENCE UPDATE)	
DT	15-DEC-1998	(REL. 37,	LAST ANNOTATION UPDATE)	
GLUCAGON PRECURSOR.				
GGC	GN			
HOMO SAPIENS ( HUMAN ).				
OS	OS			

PRIMATES; CATARRHINI; HOMINIDAE; HOMO.  
 [1]  
 RN SEQUENCE FROM N.A.  
 RX MEDLINE; 88330862.  
 RA DRUCKER D.J.; ASA S.;  
 RT "Glucagon gene expression in vertebrate brain.";  
 RL J. BIOL. CHEM. 263:13475-13478(1988).  
 RN [2]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE; 8625053.  
 RA WHITE J.W.; SAUNDERS G.F.;  
 RT "STRUCTURE of the human glucagon gene.";  
 RL NUCLEIC ACIDS RES. 14:4719-4730(1986).  
 RN [3]  
 RP SEQUENCE FROM N.A.  
 RC TISSUE=LIVER;  
 RX MEDLINE; 8271477.  
 RA BELL G.I.; SANCHEZ-PESCADOR R.; LAYBOURN P.J.; NAJARIAN R.C.;  
 RT "Exon duplication and divergence in the human preproglucagon gene.";  
 RL NATURE 304:368-371(1983).  
 RN [4]  
 RN SEQUENCE OF 53-81.  
 RA THOMSEN J., KRISTIANSEN K., BRUNFIELD K., SUNDBI F.;  
 RT "The amino acid sequence of human glucagon.";  
 RL FEBS LETTERS. 21:315-319(1972).  
 RN [5]  
 RP SEQUENCE OF 98-127.  
 RX MEDLINE; 8932238.  
 RA ORSKOV C.; BERSANI M.; JOHNSEN A.H.; HOEIJRUP P.; HOLST J.J.;  
 RT "Complete sequences of glucagon-like peptide-1 from human and pig  
 small intestine.";  
 RL J. BIOL. CHEM. 264:12826-12829(1989).  
 RN [6]  
 RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS) OF 53-81.  
 RX MEDLINE; 98334683.  
 RA STUEN N.S.; LIN Y.; BURLEY S.K.; KRISTENANSKY J.L.; AHN J.M.,  
 RA AZZEH B.Y.; TRIVEDI D.; HRUBY V.J.;  
 RT "Structure-function studies on positions 17, 18, and 21 replacement  
 RT analogues of glucagon: the importance of charged residues and salt  
 RT bridges in glucagon biological activity.";  
 RL J. MED. CHEM. 41:2693-2700(1998).  
 CC "-!- FUNCTION: PROMOTES HYDROLYSIS OF GLUCOGEN AND LIPIDS, AND RAISES  
 CC THE BLOOD SUGAR LEVEL.  
 CC "-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
 CC IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
 CC "-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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CC EMBL; J04040; G183270; -.  
 DR EMBL; X03991; G762941; -.  
 DR EMBL; Y01515; G31718; -.  
 DR EMBL; Y01515; E28349; ALT\_SEQ.  
 DR PIR; A24377; GCHU.  
 DR PIR; S23309; S23309.  
 DR MIM; 138030; -.  
 DR MIM; 231130; -.  
 DR PROST1; PS00260; GLUCAGON; 4.  
 DR PFAM; PF00123; hormone2; 3.  
 DR PDB; 1BHQ; 18-NOV-98.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL;  
 KW 3D-STRUCTURE.  
 FT SIGNAL 1 20  
 FT PEPTIDE 21 50 GRPP (GLICENTINE RELATED POLYPEPTIDE).  
 FT PEPTIDE 53 81 GLUCAGON.  
 FT PEPTIDE 98 127 GLUCAGON-LIKE PEPTIDE 1.  
 FT PEPTIDE 146 178 GLUCAGON-LIKE PEPTIDE 2.



RX MEDLINE; 97366292.	DR PFAM; PF00123; hormone2; 2.
RA IRWIN D.M.; SATKUNARAJAH M.; WEN Y.; BRUBAKER P.L.; PEDERSON R.A./	FT NON_TER; 1 1 PRELIMINARY;
RA WHEELER M.B.;	SQ SEQUENCE 72 AA; 8293 MW; 0F7AF3EC CRC32;
RT "The Xenopus proglucagon gene encodes novel GLP-1-like peptides with insulinotropic properties.";	Query Match 51.9%; Score 120; DB 13; Length 72;
RT insulinotropic Properties.";	Best Local Similarity 44.8%; Pred. No. 4.25e-07;
RL PROC. NATL. ACAD. SCI. U.S.A. 94:7915-7920(1997).	Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;
DR EMBL; AFO04433; G235018; -.	Db 39 HADGTYTSDVYSTLQDQAQDFYSWLKG 67
DR PROSTATE; PS00360; GLUCAGON; 3.	QY 1 hgegtfsdlskgmeeavrifewlkng 29
DR PFAM; PF00123; hormone2; 4.	RESULT 5
SQ SEQUENCE 219 AA; 25271 MW; 45C42A88 CRC32;	ID Q91408 PRELIMINARY; PRT; 72 AA.
Query Match 61.9%; Score 143; DB 13; Length 219;	AC Q91408
Best Local Similarity 56.7%; Pred. No. 3.51e-11;	DT 01-NOV-1996 (TREMBLREL. 01, CREATED)
Matches 17; Conservative 8; Mismatches 5; Indels 0; Gaps 0;	DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)
RESUIT 3	DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)
ID Q91188 PRELIMINARY; PRT; 66 AA.	DE PROGLUCAGON (FRAGMENT).
AC Q91188; TISSUE-PANCREAS;	OS ONCORHINCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).
DT 01-NOV-1996 (TREMBLREL. 01, CREATED)	OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII; SALMONIFORMES; SALMONIDAE;
DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)	OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII.
DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)	OC ONCORHINCHUS.
DE GLUCAGON (FRAGMENT)	RN [1]
OS ONCORHINCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).	RP SEQUENCE FROM N.A.
OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;	RX MEDLINE; 95295739.
OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;	RA IRWIN D.M.; WONG J.
OC ONCORHINCHUS.	RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";
RN [1]	RT MOL. ENDOCRINOL. 9:267-277(1995).
RP SEQUENCE FROM N.A.	DR PFAM; PF00123; hormone2; 2.
RC TISSUE-PANCREAS;	FT NON_TER 1 1
RX MEDLINE; 95295739.	SQ SEQUENCE 72 AA; 8293 MW; 0F7AF3EC CRC32;
RA IRWIN D.M.; WONG J.	Query Match 51.9%; Score 120; DB 13; Length 72;
RT Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";	Best Local Similarity 44.8%; Pred. No. 4.25e-07;
RL ENDOCRINOL. 9:267-277(1995).	Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;
DR EMBL; U19913; G736561; -.	Db 39 HADGTYTSDVYSTLQDQAQDFYSWLKG 67
DR PFAM; PF00123; hormone2; 2.	QY 1 hgegtfsdlskgmeeavrifewlkng 29
FT NON_TER 1 1	RESULT 6
SQ SEQUENCE 66 AA; 7680 MW; 62C576E2 CRC32;	ID Q91971 PRELIMINARY; PRT; 178 AA.
Query Match 51.9%; Score 120; DB 13; Length 66;	AC Q91971
Best Local Similarity 44.8%; Pred. No. 4.25e-07;	DT 01-NOV-1996 (TREMBLREL. 01, CREATED)
Matches 13; Conservative 11; Mismatches 5; Indels 0; Gaps 0;	DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)
RESUIT 4	DE GLUCAGON [1].
ID Q91409 PRELIMINARY; PRT; 72 AA.	OS ONCORHINCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).
AC Q91409; Q91332; TISSUE-INTESTINE, DISTAL PORTION;	OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;
DT 01-NOV-1996 (TREMBLREL. 01, CREATED)	OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;
DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)	OC ONCORHINCHUS.
DE GLUCAGON (FRAGMENT)	RN [1]
-	RP SEQUENCE FROM N.A.
OC ONCORHINCHUS TSCHAWITSCHA (CHINOOK SALMON) (KING SALMON).	RX MEDLINE; 95295739.
OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;	RA IRWIN D.M.; WONG J.
OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;	RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";
OC ONCORHINCHUS.	RT MOL. ENDOCRINOL. 9:267-277(1995).
RN [1]	DR PFAM; PF00123; hormone2; 3.
RX MEDLINE; 95295739.	DR PROSITE; PS00260; GLUCAGON; 3.
RA IRWIN D.M.; WONG J.	DR PFAM; PF00123; hormone2; 3.
RT Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";	DR PFAM; PF00123; hormone2; 3.
RL ENDOCRINOL. 9:267-277(1995).	DR PFAM; PF00123; hormone2; 3.
DR EMBL; S78474; E206590; -.	DR PFAM; PF00123; hormone2; 3.
DR EMBL; U19920; G736367; -.	DR PFAM; PF00123; hormone2; 3.

RESULT	9	PRELIMINARY;	PRT;	149 AA.
ID	012955;			
AC	012955;			
DT	01-JUL-1997	(TREMBLREL. 04; CREATED)		
DT	01-JUL-1997	(TREMBLREL. 04; LAST SEQUENCE UPDATE)		
DT	01-NOV-1998	(TREMBLREL. 08; LAST ANNOTATION UPDATE)		
DE	PROGLUCAGON.			
GN	LPI.			
OS	HELODERMA SUSPECTUM (GILA MONSTER).			
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; LEPIDOSAURIA; SQUAMATA;			
OC	SCLEROGLOSSA; ANGUTMORPHIA; HELODERMATIDEA; HELODERMA.			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RA	CHEN Y.E.; DRUCKER D.J.;			
RL	J. BIOL. CHEM. 0:0-0(0).			
DR	EMBL; U77611; G191663; -;			
DR	PROSTIE; PS00280; GLUCAGON; 1.			
DR	PFAM; PF00123; hormone2; 2.			
SQ	SEQUENCE 149 AA; MW: F763AB51 CRC32;			
Query Match	Best Local Similarity 48.3%; Score 108; DB 13; Length 149;			
Matches 14;	Pred. No. 4.58e-05; Conservative 7; Mismatches 8; Indels 0; Gaps			
Db	116 HADGTYTSDISSLYLEQQAKKEFIANLVNG 144			
Qy	:: :  : : :  : :  :   :   :			
Qy	1 hgegtftsdiskmqmeearvfifewlkng 29			
RESULT	10	PRELIMINARY;	PRT;	204 AA.
ID	012956;			
AC	012956;			
DT	01-JUL-1997	(TREMBLREL. 04; CREATED)		
DT	01-JUL-1997	(TREMBLREL. 04; LAST SEQUENCE UPDATE)		
DT	01-NOV-1998	(TREMBLREL. 08; LAST ANNOTATION UPDATE)		
DE	PROGLUCAGON.			
GN	LPI.I.			
OS	HELODERMA SUSPECTUM (GILA MONSTER).			
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; LEPIDOSAURIA; SQUAMATA;			
OC	SCLEROGLOSSA; ANGUTMORPHIA; HELODERMATIDEA; HELODERMA.			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RA	CHEN Y.E.; DRUCKER D.J.;			
RL	J. BIOL. CHEM. 0:0-0(0).			
DR	EMBL; U77612; G191665; -;			
DR	PROSTIE; PS00280; GLUCAGON; 2.			
DR	PFAM; PF00123; hormone2; 3.			
SQ	SEQUENCE 204 AA; MW: EEE50250D CRC32;			
Query Match	Best Local Similarity 48.3%; Score 108; DB 13; Length 204;			
Matches 14;	Pred. No. 4.58e-05; Conservative 7; Mismatches 8; Indels 0; Gaps			
Db	116 HADGTYTSDISSLYLEQQAKKEFIANLVNG 144			
Qy	:: :  : : :  : :  :   :   :			
Qy	1 hgegtftsdiskmqmeearvfifewlkng 29			
RESULT	11	PRELIMINARY;	PRT;	2127 AA.
ID	057294;			
AC	057294;			
DT	01-JUN-1998	(TREMBLREL. 06; CREATED)		
DT	01-JUN-1998	(TREMBLREL. 06; LAST SEQUENCE UPDATE)		
DT	01-JUN-1998	(TREMBLREL. 06; LAST ANNOTATION UPDATE)		
DE	L PROTEIN, RNA DEPENDENT RNA POLYMERASE.			
GN	L.			
OS	RABIES VIRUS.			
OC	VIRUSES; SSRNA NEGATIVE-STRAND VIRUSES; MONONEGAVIRALES; RHBDOVIRIDAE			
OC	LYSAVIRUS.			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RC	MINAMOTO N.			
RC	STRAIN=RC-HL;			

KL SUBMITTED (DEC-1997) TO EMBL/GENBANK/DDBJ DATA BANKS.  
 KN [2]  
 NC SEQUENCE FROM N.A.  
 RC STRAIN-RC HL;  
 RA MINAMOTO N.;  
 RL SUBMITTED (JAN-1998) TO EMBL/GENBANK/DDBJ DATA BANKS.  
 DR EMBL; AB009663; D104994; -;  
 SU SEQUENCE 2127 AA; 242427 MW; 84732FB CRC32;  
 Query Match Score 95; DB 14; Length 2127;  
 Best Local Similarity 41.1%; Pred. No. 5.81e-03;  
 Matches 10; Conservative 6; Mismatches 5;  
 Indels 0; Gaps 0;  
 Db 37 NLNSPLIEPVRMELWKTG 57  
 :|:|||:|:|||:|:|||:  
 9 diskqmeeaavrifewlkng 29  
 RESULT 12  
 ID Q3B064 PRELIMINARY;  
 AC Q3B064 PRELIMINARY;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DE REPLICASE.  
 OS BACTERIOPHAGE PP7.  
 OC VIRUSES; SSRNA POSITIVE-STRAND VIRUSES, NO DNA STAGE; LEVIVIRIDAE;  
 OC LEVIVIRUS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE: 95131399.  
 RA OLSTHOORN R.C.L.; GARDE G.; DAYHOFF T.; ATTINS J.F.; VAN DUIN J.;  
 RT "Nucleotide sequence of a single stranded RNA phage from Pseudomonas aeruginosa: kinship to coliphages and conservation of regulatory RNA structures";  
 RL VIROLOGY 206:611-625(1995).  
 DR EMBL: X80191; G51724; 5.  
 SQ SEQUENCE 552 AA; 63300 MW; 35D63A16 CRC32;  
 Query Match Score 86; DB 9; Length 552;  
 Best Local Similarity 45.0%; Pred. No. 1.40e-01;  
 Matches 9; Conservative 9; Mismatches 0; Indels 2; Gaps 2;  
 Rb— 483 DISKRILDE-VY-YVDWLRN 500  
 :|:||:|||:|:||:|||:  
 9 diskqmeeaavrifewlkng 28  
 RESULT 13  
 ID Q23629 PRELIMINARY;  
 AC Q23629 PRELIMINARY;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)  
 DE HYPOTHETICAL 95.1 KD PROTEIN.  
 GN 2K836.2.  
 OS CAENORHABDITIS ELEGANS.  
 OC EUKARYOTA; METAZOA; SECERNENTEA; RHABDITIDA; RHABDITIA; RHABDITIDAE;  
 OC RHABDITINA; RHABDITOIDEA; RHABDITIDAE; PELODERINAE; CAENORHABDITIS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA MCLAY K.;  
 RL SUBMITTED (AUG-1996) TO EMBL/GENBANK/DDBJ DATA BANKS.  
 RN [2]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE: 94150718.  
 RA BONFIELD J.; BURTON J.; CONNEL M.; COPSEY T.; COOPER J.; COULSON A.;  
 RA CRAXTON M.; DEAR S.; DU Z.; DUBBIN R.; FAVELL A.; FULTON L.;  
 RA GARDNER A.; GREEN P.; HAWKINS J.; HILLIER L.; JIER M.; JOHNSTON L.;  
 RA JONES M.; MERSHAW J.; KIRSTEN J.; LAISTER N.; LATREILLE P.;  
 RA LIGHTNING J.; LLOYD C.; MCMURRAY A.; MORTIMORE B.; O'CALLAGHAN M.,  
 RA SHOWNKEEN R.,  
 RA PARSONS J.; PERCY C.; RIFKEN L.; ROOPRA A.; SAUNDERS D.; SHOWNKEEN R.,  
 RA SMALDON N.; SMITH A.; SONNHAMMER E.; STADEN R.; SULSTON J.;  
 RA THIERRY-MIEG J.; VAUDIN M.; VAUGHAN K.; WATERSHON R.,  
 RA WATSON A.; WEINSTOCK L.; WILKINSON-SPROAT J.; WOHLMAN P.;  
 RT "2.2 Mb of contiguous nucleotide sequence from chromosome III of C. elegans";  
 RT NATURE 368:32-38 (1994).  
 DR EMBL; Z7801; E3400; -.  
 DR PFAM; PF00676; EL dehydrogenase.  
 KW HYPOTHETICAL PROTEIN.  
 SQ SEQUENCE 844 AA; 95139 MW; 9A788872 CRC32;  
 Query Match Score 81; DB 5; Length 844;  
 Best Local Similarity 40.6%;  
 Matches 13; Conservative 10; Mismatches 6; Indels 3; Gaps 3;  
 Db 363 DPFTFSPMYKYEARESPVFLDRVLVEEGF 394  
 QY :|:|||:|:|||:|:|||:|:|||:  
 3 egfttsd-lskqme-eav-rrifewlkng 31  
 RESULT 14  
 ID Q49433 PRELIMINARY;  
 AC Q49433;  
 DT 01-JUN-1998 (TREMBLREL. 06, CREATED)  
 DT 01-JUN-1998 (TREMBLREL. 06, LAST SEQUENCE UPDATE)  
 DT 01-JUN-1998 (TREMBLREL. 06, LAST ANNOTATION UPDATE)  
 DE HYPOTHETICAL 127.3 KD PROTEIN.  
 GN F18F4..160.  
 OS ARABIDOPSIS THALIANA (MOUSE-EAR CRESS).  
 OC EUPHLOPHYTES; SPERMATOPTERI; MAGNOLIOPHYTA; EUDICOTYLEDONS; ROSIDAE;  
 OC CAPPARALES; BRASSICACEAE; ARABIDOPSIS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA BEYAN M.; MURPHY G.; DROST L.; HALL C.; HUDSON S.; RIDLEY P.,  
 RA BANCROFT I.; MENYES H.W.; MAYER K.; SCHUELLER C.;  
 RL SUBMITTED (JAN-1998) TO EMBL/GENBANK/DDBJ DATA BANKS.  
 RN [2]  
 RP SEQUENCE FROM N.A.  
 RA EU ARABIDOPSIS SEQUENCING PROJECT;  
 RL SUBMITTED (FEB-1998) TO EMBL/GENBANK/DDBJ DATA BANKS.  
 DR EMBL; AL021637; E1248735; -.  
 KW HYPOTHETICAL PROTEIN.  
 SQ SEQUENCE 1134 AA; 127314 MW; 1A110A00 CRC32;  
 Query Match Score 78; DB 107; Length 1134;  
 Best Local Similarity 53.3%;  
 Matches 8; Conservative 5; Mismatches 1; Indels 1; Gaps 1;  
 Db 663 DSVKL-VNLKLNNGY 676  
 QY ::|:|||:|:|||:|:  
 17 eavrifewlkng 31  
 RESULT 15  
 ID Q21764 PRELIMINARY;  
 AC Q21764;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-AUG-1998 (TREMBLREL. 07, LAST ANNOTATION UPDATE)  
 DE R05H5.4 PROTEIN.  
 GN R05H5.4  
 OS CAENORHABDITIS ELEGANS.  
 OC EUKARYOTA; METAZOA; SECERNENTEA; RHABDITIA; RHABDITIDAE;  
 OC RHABDITINA; RHABDITOIDEA; PELODERINAE; CAENORHABDITIS.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RA BONFIELD J.; BURTON J.; CONNEL M.; COPSEY T.; COOPER J.; COULSON A.;  
 RA CRAXTON M.; DEAR S.; DU Z.; DUBBIN R.; FAVELL A.; FULTON L.;  
 RA GARDNER A.; GREEN P.; HAWKINS J.; HILLIER L.; JIER M.; JOHNSTON L.;  
 RA JONES M.; MERSHAW J.; KIRSTEN J.; LAISTER N.; LATREILLE P.;  
 RA LIGHTNING J.; LLOYD C.; MCMURRAY A.; MORTIMORE B.; O'CALLAGHAN M.,  
 RA SHOWNKEEN R.,  
 RA PARSONS J.; PERCY C.; RIFKEN L.; ROOPRA A.; SAUNDERS D.; SHOWNKEEN R.,  
 RA SMALDON N.; SMITH A.; SONNHAMMER E.; STADEN R.; SULSTON J.;  
 RA THIERRY-MIEG J.; VAUDIN M.; VAUGHAN K.; WATERSHON R.,  
 RA WATSON A.; WEINSTOCK L.; WILKINSON-SPROAT J.; WOHLMAN P.;  
 RT "2.2 Mb of contiguous nucleotide sequence from chromosome III of C. elegans";  
 RT NATURE 368:32-38 (1994).  
 DR EMBL; Z7801; E3400; -.  
 DR PFAM; PF00676; EL dehydrogenase.  
 KW HYPOTHETICAL PROTEIN.  
 SQ SEQUENCE 844 AA; 95139 MW; 9A788872 CRC32;

RA WILSON R., AINSCOUGH R., ANDERSON K., BAYNES C., BERKS M.,  
 RA BONETTELL J., BURTON J., CONNELL M., COPSEY T., COOPER J., COULSON A.,  
 RA CRASTON M., DEAR S., DU Z., DURBIN R., FAVELLO A., FULTON L.,  
 RA GARDNER A., GREEN P., HAWKINS T., JETER L., JOHNSTON L.,  
 RA JONES M., KERSHAW J., KIRSTEN J., LAISTER N., LATREILLE P.,  
 RA LIGHTNING J., LLOYD C., McMURRAY A., MORTIMORE B., O'CALLAGHAN M.,  
 RA PARSONS J., PERCY C., RIEKEN L., ROOPRA A., SAUNDERS D., SHOWNKEEN R.,  
 RA SMALDON N., SMITH A., SONNHAMMER E., STADEN R., SULSTON J.,  
 RA THIERRY-MIEG J., THOMAS K., VAUDIN M., VAUGHAN K., WATERSON R.,  
 RA WATSON A., WEINSTOCK L., WILKINSON-SPROAT J., WORLDMAN P.;  
 RI "2.2 Mb of contiguous nucleotide sequence from chromosome III of C.  
 K1 elegans";  
 RL NATURE 366:32-38(1994).

DR EMBL: Z48795; E1351719;  
 DR PROSITE; PS00107; PROTEIN\_KINASE\_ATP; 1.  
 DR PROSITE; PS00109; PROTEIN\_KINASE\_TYR; 1.  
 SQ SEQUENCE 414 AA; 47188 MW; 73BADE09 CRC32;  
 Query Match Score 77; DB 5; Length 414;  
 Best Local Similarity 33.3%; Pred. No. 2.85e-00;  
 Matches 10; Conservative 9; Mismatches 8; Indels 1; Gaps 1;  
 33 EGDFMVTMKKKOLDINKLQLFLAVRLKG 60  
 ||| :||: :||: :||: :||:  
 QY 3 egfttsdlskqmeedavrifile-wlkng 29

Search completed: Mon Oct 4 15:25:30 1999  
 Job time : 15 secs.



QY 1 hsdgfttsdiskqmeearvlifewlknggpssgappps 40

RESULT<sup>2</sup>  
ID R80545 standard; peptide; 39 AA.  
AC R80545;  
DT 27-FEB-1996 (first entry)  
DE Heloderma horridum exendin-3.  
KW Heloderma horridum.  
OS Heloderma horridum.  
PN US5424286-A.  
PD 13-JUN-1995.  
PF 24-MAY-1993; US-066480.  
PR 24-MAY-1993; US-066480.  
PA (ENGLISH) ENG J.  
SQ WPI: 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) - for treating diabetes mellitus and preventing hyperglycaemia.

PS Claim 5; Columns 13-14; 17PP; English.

CC R80545 is Heloderma horridum exendin-3. It is an insulinotropic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II) and for the prevention of hyperglycaemia. It normalises hyperglycaemia through glucose-dependent and insulin-(in)dependent mechanisms. Sequence 39 AA;

Query Match Score 93.5%; DB 14; Length 39;  
Best Local Similarity 97.5%; Pred. No. 2 62e-15;  
Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Db 1 hsdgft-tsdiskqmeearvlifewlknggpssgappps 39  
QY 1 hsdgfttsdiskqmeearvlifewlknggpssgappps 40

RESULT<sup>3</sup>  
ID W47608 standard; peptide; 39 AA.  
AC W47608;  
DT 03-JUL-1998 (first entry)  
DE Gila monster exendin-3.  
KW Exendin agonist; gastric motility; gastric emptying; treatment; spasm; postprandial dumping syndrome; postprandial hypoglycemia; type I diabetes; impaired glucose tolerance; toxin ingestion; obesity; Gila monster venom; exendin-3.  
Heloderma horridum.  
Location/Qualifiers  
Modified.site 39  
/note= "amidated"  
PN W09805351-A1.  
PD 12-FEB-1998.  
PF 08-AUG-1997; US-14199.  
PR 08-AUG-1996; US-6994954.  
PA (AMIL-) AMILIN PHARM INC.  
PI Beeley NRA; Gedulin B; Prickett KS; Young AA;  
DR WPI: 98-144351/13.  
PT Regulating gastrointestinal motility using exendins or their agonists - for treating spasm, diabetic postprandial hypoglycaemia, impaired glucose tolerance etc., also in diagnostic investigations  
Claims 20 and 21; Fig 1; 70PP; English.  
W47549 describes a generic exendin agonist, provided that it does have the formula of either exendin-3 (W47608) or exendin-4 (W47609).  
Exendin agonists, which reduce gastric motility and delay gastric emptying, can be used to treat spasm (where associated with acute diverticulitis or disorders of the biliary tract or sphincter of Oddi). Postprandial dumping syndrome and hyperglycaemia (particularly associated with type 2 diabetes), type 1 diabetes, impaired glucose tolerance, toxin ingestion (an exendin agonist is administered to prevent stomach contents passing into the intestines then the stomach pumped) and obesity. They can also be administered to subjects undergoing gastrointestinal diagnostic investigation, particularly radiological or by magnetic resonance

CC imaging.  
Exendins, components of Gila monster venom, have some sequence similarity to glucagon-like peptides (GLP). They are GLP agonists and have been suggested (US5424286) for treatment of diabetes and prevention of hyperglycaemia.  
Sequence 39 AA;

Query Match Score 93.5%; DB 30; Length 39;  
Best Local Similarity 97.5%; Pred. No. 2 62e-15;  
Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

Db 1 hsdgft-tsdiskqmeearvlifewlknggpssgappps 39  
QY 1 hsdgfttsdiskqmeearvlifewlknggpssgappps 40

RESULT<sup>4</sup>  
ID W61770 standard; peptide; 39 AA.  
AC W61770;  
DT 29-MAR-1999 (first entry)  
DE Exendin-4, for use in treating disorders related to food intake  
KW obesity; type II diabetes; eating disorders; cardiac disease; insulin resistance syndrome; elevated plasma glucose level; agonist.  
OS Heloderma suspectum.  
PN W09830231-A1.  
PD 16-JUL-1998.  
PF 07-JAN-1998; US-00449.  
PR 14-NOV-1997; US-066029.  
PR 07-JAN-1997; US-034905.  
PR 08-AUG-1997; US-055404.  
PR 14-NOV-1997; US-065442.  
PA (AMIL-) AMILIN PHARM INC.  
PI Beeley NRA; Bhavasar S; Prickett KS;  
DR WPI: 98-398796/34.  
PT Reducing food intake by administering exendins or their analogues - for treatment of e.g. obesity, type II diabetes, claims 17, 25; Page 8; 24PP; English.  
CC the invention relates to a new method for treating disorders that are alleviated by reducing food intake, in particular obesity, type II diabetes, eating disorders, insulin resistance syndrome, elevated plasma glucose levels, or the risk of cardiac disease. The method comprises administering an exendin or an exendin agonist. The treatment reduces appetite and lowers plasma lipid levels. It inhibits food consumption as effectively as amylin or cholecystokinin but has a much longer-lasting action (still effective after 6 hours in a mouse model).  
Key The present sequence is that of exendin-4 which is one of the preferred compounds for use in the method.  
CC Sequence 39 AA;

Query Match Score 92.1%; DB 39; Length 39;  
Best Local Similarity 92.5%; Pred. No. 6 24e-15;  
Matches 37; Conservative 2; Mismatches 0; Indels 1; Gaps 1;

Db 1 hgegtf-tsdiskqmeearvlifewlknggpssgappps 39  
QY 1 hsdgfttsdiskqmeearvlifewlknggpssgappps 40

RESULT<sup>5</sup>  
ID R80546 standard; peptide; 39 AA.  
AC R80546;  
DT 27-FEB-1996 (first entry)  
DE Heloderma suspectum exendin-4.  
KW Exendin-4; diabetes mellitus; hyperglycaemia; insulinotropic peptide.  
OS Heloderma suspectum.  
PN US5424286 A.  
PD 24-MAY-1993; 066480.  
PR 24-MAY-1993; US-066480.  
(ENGLISH) ENG J.  
PI Eng J;  
DR 95-262627/34.

PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 PT for treating diabetes mellitus and preventing hyperglycaemia.  
 PS Claim 6; Columns 13-14; 17pp; English.  
 CC R80546 is Heloderma suspectum exendin-4. It is an  
 CC insulinotrophic peptide, and can therefore be used in the treatment of  
 CC diabetes mellitus (types I or II), and for the prevention of  
 CC hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 CC and insulin-(in)dependent mechanisms.  
 SQ Sequence 39 AA;

Query Match 6  
 Best Local Similarity 92.1%; Score 256; DB 14; Length 39;  
 Matches 37; Conservative 2; Mismatches 0; Indels 1; Gaps 1;

Db 1 hgegtf-tsdliskqmeearvrlfiewlkngppssappps 39  
 :|||||:|||||:|||||:|||||:|||||:|||||:|||||:  
 Qy 1 hsdgftitsdlsdiskqmeearvrlfiewlkngppssappps 40

RESULT 6  
 ID W47609 standard; peptide; 39 AA.  
 AC W47609;  
 AC 03-JUL-1998 (first entry)  
 Gila monster exendin-4.  
 KW Exendin agonist; gastric motility; gastric emptying; treatment;  
 KW spasm; postprandial dumping syndrome; postprandial hyperglycaemia;  
 KW type 1 diabetes; impaired glucose tolerance; toxin ingestion;  
 KW obesity; Gila monster venom; exendin-4.  
 OS Heloderma suspectum.  
 FH Location/Qualifiers  
 FT Modified\_site /note= "amidated"  
 FT  
 PN W0985351-A1.  
 PD 12-FEB-1998.  
 PF 08-AUG-1997; U14199.  
 PA (AMYL-) AMYLYN PHARM INC.  
 PT Beeley NRA, Gedlin B, Prickett KS, Young AA;  
 DR WPI: 98-14351/13.  
 PT Regulating gastrointestinal motility using exendins or their  
 PT agonists for treating spasm, diabetic postprandial hyperglycaemia,  
 PT impaired glucose tolerance etc., also in diagnostic investigations  
 CC Cidins 20 and 21; Fig 1; 70pp; English.  
 CC W47549 describes a generic exendin agonist, provided that it does  
 CC have the formula of either exendin-3 (W47608) or exendin-4  
 CC (W47609).  
 CC Exendin agonists, which reduce gastric motility and delay gastric  
 CC emptying, can be used to treat spasm (where associated with acute  
 CC diverticulitis or disorders of the biliary tract or sphincter of  
 CC Oddi), postprandial dumping syndrome and hyperglycaemia  
 CC (particularly associated with type 2 diabetes), type 1 diabetes,  
 CC impaired glucose tolerance, toxin ingestion (an exendin agonist is  
 CC administered to prevent stomach contents passing into the  
 CC intestines, then the stomach pump) and obesity. They can also be  
 CC administered to subjects undergoing gastrointestinal diagnostic  
 CC investigations, particularly radiological or by magnetic resonance  
 CC imaging.  
 CC Exendins, components of Gila monster venom, have some sequence  
 CC similarity to glucagon-like peptides (GLP). They are GLP agonists  
 CC and have been suggested (US5424286) for treatment of diabetes and  
 CC prevention of hyperglycaemia.  
 SQ Sequence 39 AA;

Query Match 92.1%; Score 256; DB 30; Length 39;  
 Best Local Similarity 92.5%; Pred. No. 6.24e-15;  
 Matches 37; Conservative 2; Mismatches 0; Indels 1; Gaps 1;

Db 1 hgegtf-tsdliskqmeearvrlfiewlkngppssappps 39  
 :|||||:|||||:|||||:|||||:|||||:  
 Qy 1 hsdgftitsdlsdiskqmeearvrlfiewlkngppssappps 40

RESULT 7

ID W70288 standard; protein; 87 AA.  
 AC W70288;  
 AC 06-NOV-1998 (first entry)  
 DE Heloderma suspectum proexendin peptide, exendin N-terminal peptide;  
 KW Heloderma suspectum proexendin; exendin 3 gene; Heloderma horridum; metabolic disease;  
 KW exendin 4 peptide; exocrine tumour; organ failure; cell metabolism;  
 KW drug screening; endocrine tumour; organ failure; cell metabolism;  
 KW diabetes; reptilian venom peptide.  
 OS Heloderma suspectum.  
 FH Location/Qualifiers  
 FT Key 1.23  
 FT /note= "Signal peptide"  
 FT Peptide 1..47  
 FT /note= "ENTP"  
 FT Peptide 48..87  
 FT /note= "Exendin 4"  
 FT Cleavage\_site 46..47  
 FT /note= "Dipeptidyl peptidase cleavage site"  
 PN W09835033-A1.  
 PD 13-AUG-1998.  
 PF 04-FEB-1998; CA0071.  
 PR 07-FEB-1997; GB-002582.  
 PR 05-FEB-1997; US-037412.  
 PA (ONEO-) 1149336 ONTARIO INC.  
 PI Drucker DJ;  
 DR WPI: 98-447230/38.  
 DR N-PSDB; Y33163.  
 PT New nucleic acid encoding proexendin - used to diagnose and treat,  
 PT e.g. endocrine tumours, also to treat poisoning by reptile venom  
 PS Claim 3; Fig 2; 26pp; English.  
 CC The Heloderma suspectum proexendin peptide is encoded by its cDNA  
 CC which was isolated from a H. suspectum salivary gland cDNA library.  
 CC The proexendin protein comprises of a novel exendin N-terminal  
 CC peptide (BNTP) linked to the N-terminus of the exendin 4 peptide  
 CC by a consensus dipeptidyl peptidase cleavage site. The proexendin  
 CC cDNA can be used to clone or identify related sequences (e.g. the  
 CC exendin 3 gene of Heloderma horridum, mutant alleles and proexendin  
 CC gene regulatory defects associated with metabolic disease) and species  
 CC homologues (e.g. for developing animal models for drug screening).  
 CC The proexendin peptide can be used to raise antibodies. Anti-proexendin  
 CC antibodies are claimed to be useful for diagnosing conditions associated  
 CC with altered levels of proexendin (e.g. endocrine tumours and organ  
 CC failure), for identifying other regulators of cell metabolism, in drug  
 CC screens and for treating metabolic diseases (e.g. diabetes) and for  
 CC neutralising, or detecting, reptilian venom peptides.  
 SQ Sequence 87 AA;

Query Match 92.1%; Score 256; DB 35; Length 87;  
 Best Local Similarity 92.5%; Pred. No. 6.24e-15;  
 Matches 37; Conservative 2; Mismatches 0; Indels 1; Gaps 1;

Db 48 hgegtft-sdlsdiskqmeearvrlfiewlkngppssappps 86  
 :|||||:|||||:|||||:|||||:  
 Qy 1 hsdgftitsdlsdiskqmeearvrlfiewlkngppssappps 40

RESULT 8

ID W61773 standard; peptide; 39 AA.  
 AC W61773;  
 AC 29-MAR-1999 (first entry)  
 DE Leu(14)-Phe(25)-exendin-4 amide, for reducing food intake.  
 KW Exendin; obesity; type II diabetes; eating disorders; cardiac disease;  
 KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 OS Heloderma suspectum.  
 FH Location/Qualifiers  
 FT Key 39  
 FT Modified\_site 39  
 FT /note= "the C-terminal is in amide form"  
 PN W09830231-A1.  
 PD 16-JUL-1998.  
 PR 07-JAN-1998; US00449.  
 PR 14-NOV-1997; US-066029.  
 PR 07-JAN-1997; US-034905.

RESULT 9

PR 08-AUG-1997; US-055404.  
PR 14-NOV-1997; US-055442.  
PA (AMYL-) AMYLIN PHARM INC.  
PT Beeley NRA, Bhavasar S, Prickett KS;  
DR WPI; 98-398736/34.  
Reducing food intake by administering exendins or their  
analogues - for treatment of e.g. obesity, type II diabetes,  
eating disorders and insulin resistance

PS Claims 18, 26; Page 12; 21pp; English.  
The invention relates to a new method for treating disorders that  
are alleviated by reducing food intake, in particular obesity, type  
II diabetes, eating disorders, insulin resistance syndrome, elevated  
plasma glucose levels, or the risk of cardiac disease. The method  
comprises administering an exendin or an exendin agonist. The method  
reduces appetite and lowers plasma lipid levels. It inhibits food  
consumption as effectively as amylin or cholecystokinin but has a much  
longer-lasting action (still effective after 6 hours in a mouse model).  
The present sequence is that of an exendin-4 variant which is one of  
the preferred compounds for use in the method.

SQ Sequence 39 AA;

Query Match 83.1%; Score 231; DB 39; Length 39;

Best Local Similarity 87.5%; Pred. No. 1.30e-12;  
Matches 35; Conservative 3; Mismatches 1; Indels 1; Gaps 1;

DB 1 hgegtf-tsdlskqleeeavriflwkgnggppps 39  
Qy 1 hsdgfttsdlskqmeearvrliflwkgnggppps 40

RESULT 9

ID R80547 standard; Peptide; 31 AA.

AC F80547;

DT 27-FEB-1996 (first entry)

DE Heloderma suspectum exendin-4 residues 9-39 (Extendin-4(9-39)).

KW Exendin-4; residues 9-39; Extendin-4 (9-39);

KW Insulinotropic Peptides; inhibitor.

PN US5424286-A.

PD 13-JUN-1995.

PP 24-MAY-1993; 066480.

PR 24-MAY-1993; US-066480.

PA (ENGJ/) ENG J.

PI Eng J;

WPI; 95-262627/34.

Stimulating/inhibiting insulin release with exendin polypeptide(s) -

PS Claim 7; Columns 13-14; 17pp; English.

CC R80547 is the Heloderma suspectum exendin-4 residues 9-39. It

is an insulinotropic peptide activity inhibitor.

SQ Sequence 31 AA;

Query Match 79.1%; Score 220; DB 14; Length 31;

Best Local Similarity 100.0%; Pred. No. 1.47e-11; Mismatches 0; Indels 0; Gaps 0;

DB 1 diskameearvrliflwkgnggppssgappps 31

Qy 10 diskameearvrliflwkgnggppssgappps 40

RESULT 10

ID R80543 standard; Peptide; 31 AA.

AC R80543;

DT 27-FEB-1996 (first entry)

DE Heloderma suspectum exendin-4 residues 1-31 (Extendin-4(1-31)).

KW Exendin-4; residues 1-31; Extendin-4(1-31); diabetes mellitus;

KW hyperglycaemia; insulinotropic Peptide.

OS Heloderma suspectum.

PN US5424286-A.

PD 13-JUN-1995.

PP 24-MAY-1993; 066480.

PR 24-MAY-1993; US-066480.

PA (ENGJ/) ENG J.  
PT Eng J;  
DR WPI; 95-262627/34.  
Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
PT for treating diabetes mellitus and preventing hyperglycaemia.  
PS Claim 1; Columns 13-14; 17pp; English.  
CC R80543 is the Heloderma suspectum exendin-4 residues 1-31. It is an  
insulinotropic peptide, and can therefore be used in the treatment of  
diabetes mellitus (types I or II), and for the prevention of  
hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
CC and insulin-(in)dependent mechanisms.  
SQ Sequence 31 AA;

Query Match 75.2%; Score 209; DB 14; Length 31;  
Best Local Similarity 90.6%; Pred. No. 1.54e-10;  
Matches 29; Conservative 2; Mismatches 0; Indels 1; Gaps 1;  
DB 1 hgegtf-tsdlskqmeearvrliflwkgnggpp 31  
Qy 1 hsdgfttsdlskqmeearvrliflwkgnggpp 32

RESULT 11

ID W61771 standard; peptide; 30 AA.  
AC W61771;  
DT 29-MAR-1999 (first entry)  
DE Exendin-4 (1-30) for use in treating disorders related to food intake.  
KW obesity; type II diabetes; eating disorders; cardiac disease;  
OS Heloderma suspectum  
PH Key  
FT Modified\_site 30  
FT /note= "optionally the C-terminal is in amide form"  
FT PN W09830231-A1.  
PD 16-JUL-1998.  
PR 07-JAN-1998; D00449  
PR 14-NOV-1997; US-066029.  
PR 07-JAN-1997; US-034050.  
PR 08-AUG-1997; US-055404.  
PR 14-NOV-1997; US-065442.  
PA (AMYL-) AMYLIN PHARM INC.  
PT Beeley NRA, Bhavasar S, Prickett KS;  
DR WPI; 98-338795/34.  
PT Reducing food intake by administering exendins or their  
analogues - for treatment of e.g. obesity, type II diabetes,  
eating disorders and insulin resistance.  
PS Claims 18, 26; Page 11; 214pp; English.  
The invention relates to a new method for treating disorders that  
are alleviated by reducing food intake, in particular obesity, type  
II diabetes, eating disorders, insulin resistance syndrome, elevated  
plasma glucose levels, or the risk of cardiac disease. The method  
comprises administering an exendin or an exendin agonist. The treatment  
reduces appetite and lowers plasma lipid levels. It inhibits food  
consumption as effectively as amylin or cholecystokinin but has a much  
longer-lasting action (still effective after 6 hours in a mouse model).  
The present sequence is that of exendin-4 (1-30) or its amide which is  
one of the preferred compounds for use in the method.

SQ Sequence 30 AA;

Query Match 72.3%; Score 201; DB 39; Length 30;  
Best Local Similarity 90.3%; Pred. No. 8.41e-10;  
Matches 28; Conservative 2; Mismatches 0; Indels 1; Gaps 1;  
DB 1 hgegtf-tsdlskqmeearvrliflwkgng 30  
Qy 1 hsdgfttsdlskqmeearvrliflwkgng 31

RESULT 12

ID R80544 standard; Peptide; 31 AA.  
AC R80544;  
DT 27-FEB-1996 (first entry)  
DE Heloderma suspectum exendin-4 residues 1-31-Ty31.  
OS Heloderma suspectum 31.

KW Exendin-4; residues 1-31; Y-31-Exendin-4(1-31); diabetes mellitus;  
KW hyperglycaemia; Tyr31; insulinotropic peptide.  
KW heloderma suspectum.  
US ID N  
US 424286-A.  
IN 12-JUN-1995.  
PR 24-MAY-1993; 066480.  
PA (ENSGJ) ENG J.  
PI WPI; 95-262627/34.  
DR Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
for treating diabetes mellitus and preventing hyperglycaemia.  
CC R80544 is the Heloderma suspectum exendin-4 residues 1-31, where  
the native Pro31 has been replaced with a Tyr residue. It is an  
insulinotropic peptide, and can therefore be used in the treatment of  
diabetes mellitus (types I or II), and for the prevention of  
hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
and insulin-(in)dependent mechanisms.  
SQ Sequence 31 AA;

Query Match 72.3%; Score 201; DB 14; Length 31;  
Best Local Similarity 90.3%; Pred. No. 8.41e-10;  
Matches 28; Conservative 2; Mismatches 0; Indels 1; Gaps 1;  
FT 1 hgsgtf-tsdlskqmeearvrlfiewlkngg 30  
QY 1 hsdgfttsdlskqmeearvrlfiewlkngg 31

RESULT 13  
ID W39301 standard; peptide; 30 AA.

AC W39301;  
DT 05-JUN-1998 (first entry)

DE H. horridum exendin-3 peptide.

CC Exendin 3; exendin 4; diabetes; insulin; secretion; biosynthesis;

KW glucagon reduction; hypoglycaemia; glucose; treatment.

OS Heloderma horridum.

Key Location/Qualifiers

FT Modified\_site 30  
QY /note= "This residue can be any amino acid except Gly"

FT W09746584-A1.  
PN 11-DEC-1997.  
PR 05-JUN-1996; DE-037230.

PA (BOEFL) BOERINGER MANNHEIM GMBH.

PI Goede B, Goede R, Hoffmann E;

DR WPI; 98-042119/04.

DR Truncated versions of exendin peptide(s) for treating diabetes -

increase secretion and biosynthesis of insulin, but reduce those of

glucagon, and do not induce hypoglycaemia.

Claim 1; Page 3; 150PP; English.

This peptide is a fragment of exendin-3 isolated from Heloderma

horridum. This peptide and its salts, esters and derivatives can be

used to treat diabetes mellitus. They stimulate biosynthesis and

secretion of insulin, but have the opposite effect on glucagon, and

independent of this activity can be more active (effective

at lower doses), more stable to degradation and metabolism and have a

longer lasting effect. Truncated forms of this peptide can be made more

economically than full length versions.

SQ Sequence 30 AA;

Query Match 71.2%; Score 198; DB 29; Length 30;  
Best Local Similarity 96.7%; Pred. No. 1.59e-09;  
Matches 29; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

DB 1 hsdgfttsdlskqmeearvrlfiewlkng 29

QY 1 hsdgfttsdlskqmeearvrlfiewlkng 30

RESULT 14  
ID W39368 standard; peptide; 30 AA.  
AC W39368;  
DT 05-JUN-1998 (first entry)  
DE H. horridum exendin-3 peptide derivative #11.  
KW Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
KW glucagon reduction; hypoglycaemia; glucose; treatment.  
OS Heloderma horridum.  
Key Location/Qualifiers  
FT Modified\_site 30  
FT /note= "C-terminal amide"  
FT PN W09746584-A1.  
PR 11-DEC-1997.  
PR 05-JUN-1996; DE-037230.  
PR 05-JUN-1996; DE-022502.  
PA (BOEFL) BOERINGER MANNHEIM GMBH.

PI Goede B, Goede R, Hoffmann E;  
DR WPI; 98-042119/04.  
PT Truncated versions of exendin peptide(s) for treating diabetes -  
increase secretion and biosynthesis of insulin, but reduce those of  
glucagon, and do not induce hypoglycaemia  
Claim 2; Page 2; 150PP; English.  
PS Peptides w3303/W39420 are fragments of exendin-3 and exendin-4  
isolated from Heloderma horridum which are used in a novel method  
for the treatment of diabetes mellitus. These peptides can stimulate  
biosynthesis and secretion of insulin, but have the opposite effect on  
glucagon, and independent of this activity can increase peripheral  
glucose utilisation. Exendin-3 and exendin-4 are only active when blood  
sugar levels are high, so they will not induce hypoglycaemia. Compared  
with glucagon-like peptide 1 (GLP1) and the known exends, they are more  
active (effective at lower doses), more stable to degradation and  
metabolism and have a longer lasting effect. Truncated forms of this  
peptide can be made more economically than full length versions.  
SQ Sequence 30 AA;

Query Match 71.2%; Score 198; DB 29; Length 30;  
Best Local Similarity 96.7%; Pred. No. 1.59e-09;  
Matches 29; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

DB 1 hsdgfttsdlskqmeearvrlfiewlkng 29  
QY 1 hsdgfttsdlskqmeearvrlfiewlkng 30  
Key Location/Qualifiers  
FT Modified\_site 30  
FT /note= "This residue can be any amino acid except Gly"  
FT PN W09746584-A1.  
PR 11-DEC-1997.  
PR 05-JUN-1997; DE-037230.  
PR 13-SEP-1996; DE-037230.  
PR 05-JUN-1996; DE-022502.  
PA (BOEFL) BOERINGER MANNHEIM GMBH.

PI Goede B, Goede R, Hoffmann E;  
DR WPI; 98-042119/04.  
PT Truncated versions of exendin peptide(s) for treating diabetes -  
increase secretion and biosynthesis of insulin, but reduce those of  
glucagon, and do not induce hypoglycaemia  
Claim 1; Page 4; 150PP; English.  
PS Peptides w3303/W39420 are fragments of exendin-3 and exendin-4  
isolated from Heloderma horridum which are used in a novel method  
for the treatment of diabetes mellitus. These peptides can stimulate  
biosynthesis and secretion of insulin, but have the opposite effect on  
glucagon, and independent of this activity can increase peripheral  
glucose utilisation. Exendin-3 and exendin-4 are only active when blood  
sugar levels are high, so they will not induce hypoglycaemia. Compared  
with glucagon-like peptide 1 (GLP1) and the known exends, they are more  
active (effective at lower doses), more stable to degradation and  
metabolism and have a longer lasting effect. Truncated forms of this  
peptide can be made more economically than full length versions.  
SQ Sequence 30 AA;

Query Match 71.2%; Score 198; DB 29; Length 30;  
Best Local Similarity 96.7%; Pred. No. 1.59e-09;  
Matches 29; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

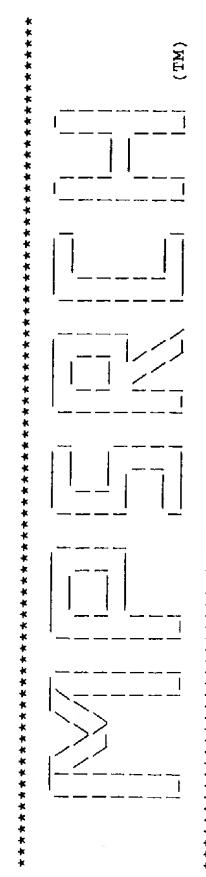
DB 1 hsdgfttsdlskqmeearvrlfiewlkng 29

horridum. This peptide and its salts, esters and derivatives can be used to treat diabetes mellitus. They stimulate biosynthesis and secretion of insulin, but have the opposite effect on glucagon, and independent of this activity can increase peripheral glucose utilisation. Exendin-3 and exendin-4 are only active when blood sugar levels are high, so they will not induce hypoglycaemia. Compared with glucagon-like peptide 1 (GLP1) and the known exendins, they are more active (effective at lower doses), more stable to degradation and metabolism and have a longer lasting effect. Truncated forms of this peptide can be made more economically than full length versions.

Sequence : 30 AA;

```
Query Match 69.8%; Score 194; DB 29; Length 30;
Best Local Similarity 90.0%; Pred. No. 3.70e-09;
Matches 27; Conservative 2; Mismatches 0; Indels 1; Gaps 1;
1 hgegtf-tsdlskmqeeeavrlfiwkg 29
|:||| | ||||| ||||| ||||| ||||| |
1 hsdtgfftsdskmqeeeavrlfiwkg 30
```

Search completed: Mon Oct 4 15:30:39 1999  
 Job time : 20 secs.



Release 3.1A John F. Collins, Biocomputing Research Unit.

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MPstrch\_pp protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:29:52 1999; MasPar time 4.88 Seconds  
328.404 Million cell updates/sec

Ampliar output not generated.

File: >MOHAM-312-CLAIM83A.PEP  
(1-10) from moham312177.pep  
Perfect Score:  
Sequence: 1 hsdtgfiftsdskqmeeeeavrliew1knngppsgppps 40

Scoring table: PAM 150  
Gap 11

Searched: 122810 seqs, 40068593 residues

Post-processing: Minimum Match 0%

Listing first 45 summaries

Database: Pir60

1:pir1 2:pir2 3:pir3 4:pir4  
Statistics: Mean 35.024; Variance 64.745; scale 0.541

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query	Match Length	DB ID	Description	Pred. No.
1	260	93.5	39	1	HKGH3Z	exendin-3 - Mexican b
2	256	92.5	39	1	HKGH4G	exendin-4 - Gila mons
3	118	42.4	101	1	GCGGB	glucagon precursor -
4	117	42.1	31	2	SA4472	glucagon G2 - North A
5	116	41.7	63	1	GCDCC	glucagon precursor -
6	113	40.6	30	2	SA4473	glucagon-like peptide 1
7	112	40.3	31	2	SA4471	glucagon G1 - North A
8	111	39.9	66	2	151093	glucagon - chinook sa
9	111	39.9	178	2	151058	glucagon I precursor
10	111	39.9	178	2	151057	glucagon II precursor
11	110	39.6	30	2	C61125	glucagon-like peptide 3
12	110	39.6	30	2	B61125	glucagon-like peptide 3
13	110	39.6	72	1	GCGKA	glucagon precursor -
14	109	39.2	122	1	GCAE2	glucagon 2 precursor
15	108	38.8	60	1	GCONC	glucagon precursor -
16	106	38.1	29	1	GCFIF	glucagon - smaller sp
17	104	37.4	124	1	GCAF	glucagon 1 precursor
18	104	37.4	158	1	GCFC	glucagon precursor -
19	104	37.4	180	1	GCF	glucagon precursor -
20	104	37.4	180	1	GCRDU	glucagon precursor -
21	104	37.4	180	1	GCBO	glucagon precursor -
22	104	37.4	180	1	GCHP	glucagon precursor -
23	104	37.4	180	1	GCCP	glucagon precursor -

---

RESULT	1
ENTRY	HKGH3Z #type complete
TITLE	exendin-3 - Mexican beaded lizard
ORGANISM	#formal_name Heloderma horridum #common_name Mexican beaded lizard
DATE	31-Mar-1993 #text_change
ACCESSIONS	A23674
REFERENCE	J.P. Eng, J.; Andrews, P.C.; Kleinman, W.A.; Singh, L.; Rauffman, E. J. Biol. Chem. (1990) 265:20259-20262
authors	J.P. Eng, J.; Andrews, P.C.; Kleinman, W.A.; Singh, L.; Rauffman, E. J. Biol. Chem. (1990) 265:20259-20262
title	Purification and structure of exendin-3, a new Pancreatic secretagogue isolated from <i>Heloderma horridum</i> venom.
#cross-references	MJDB:91056067
#molecule_type	Protein
#residues	1-39 #label ENG
COMMENT	Exendins are venom components that are thought to bind to receptors for vasoactive intestinal peptide and/or secretin on pancreatic acinar cells and to activate adenylyl cyclase, resulting in secretion of amylase.
CLASSIFICATION	#superfamily Glucagon amidated carboxyl end; duplication; secretagogue; venom
KEYWORDS	#modified site amidated carboxyl end (Ser) #status experimental
FEATURE	#length 39 #molecular-weight 4204 #checksum 9591
SUMMARY	Query Match 93.5%; Score 260; DB 1; Length 39; Best Local Similarity 91.5%; Pred. No. 7.55e-34; Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1; DB 1 HSDOTF-TSDLISKOMEKAVRLEFWLKNGGPPSGAPPS 39 QY 1 hsdfgftsdlsqmeeaevrifewlkngggappp 40
RESULT	2
ENTRY	HKGH4G #type complete
TITLE	exendin-4 - Gila monster
ORGANISM	#formal_name Heloderma suspectum #common_name Gila monster
DATE	31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change
ACCESSIONS	A42486
REFERENCE	J. Eng, J.; Kleinman, W.A.; Singh, L.; Singh, G.; Rauffman, E. J. Biol. Chem. (1990) 265:20259-20262
authors	J. Eng, J.; Kleinman, W.A.; Singh, L.; Singh, G.; Rauffman, E. J. Biol. Chem. (1990) 265:20259-20262

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#journal J. Biol. Chem. (1992) 267:7402-7405
#title Isolation and characterization of exendin-3
#cross-references MURID:92218391
#accession A42486
#molecule-type protein
#residues 1-39 *label ENG
COMMENT Exendin-4 does not stimulate amylase secretion by pancreatic acinar cells.
CLASSIFICATION #superfamily glucagon
KEYWORDS amidated carboxyl end; duplication; venom
FEATURE F
39
#modified site amidated carboxyl end (Ser) #status experimental
MARY #length:39 #molecular_weight 4188 *checksum 9570
Query Match 92.1%; Score 256; DB 1; Length 39;
Best Local Similarity 92.5%; Pred. No. 4 98e-33;
Matches 37; Conservative 2; Mismatches 0; Indels 1; Gaps 1;
Db 1 HEGEGF-TSDLSKOMEAEAVRLFIEWLKGPGSSGAPPS 39
Qy 1 hsdgfttsdlskomeeeavrlfiewlkgpgssgappss 40
RESULT 3
GCGB #type fragments
glucagon precursor - bullfrog (fragments)
ALTERNATE_NAMES oxyntomodulin
CONTAINS glucagon; Glucagon-36 (oxyntomodulin); glucagon-like peptide 1; glucagon-like peptide 2
ORGANISM #formal_name Rana catesbeiana *common_name bullfrog
DATE 31-Mar-1993 *sequence_revision 31-Mar-1993 #text_change
B28091; C28091; D28091
A92730
REFS
#cross-references MURID:92218391
#accession B28091
#molecule-type protein
#residues 1-36 #label P02
#accession C28091
#molecule-type protein
#residues 37-68 #label P01
#accession D28091
#molecule-type protein
#residues 69-101 #label P03
CLASSIFICATION #superfamily glucagon
KEYWORDS carbohydrate metabolism; duplication; hormone; pancreas
FEATURE F
1-36
#product glucagon-36 (oxyntomodulin) #status experimental
1-29
#product glucagon #status Predicted #label GCN \
37-67
#product glucagon-like Peptide 1 #status experimental
QY-101
#product glucagon-like peptide 2 #status experimental
#length 101 *checksum 9108
SUMMARY #length 101 #checksum 9108
Query Match 42.4%; Score 118; DB 1; Length 101;
Best Local Similarity 53.1%; Pred. No. 1.45e-06; Indels 1; Gaps 1;
Db 37 HADOTF-TSDMSSYLYEAKAEFYDWLKGGRP 67
QY 1 hsdgfttsdlskomeeeavrlfiewlkgpgsp 32
RESULT 6

```

ENTRY  
 TITLE glucagon-like Peptide - North American paddlefish (Polyodon spathula)  
 ORGANISM #formal\_name Polyodon spathula  
 DATE 18-Sep-1997 #sequence\_revision 18-Sep-1997 #text\_change  
 20-Mar-1998  
 S44473  
 ACCESSIONS  
 REFERENCE Nguyen, T.M.; Mounsen, T.P.; Mims, S.M.; Conlon, J.M.  
 Biochem. J. (1994) 300:339-345  
 Characterization of insulin and proglucagon-derived peptides from a phylogenetically ancient fish, the paddlefish (Polyodon spathula).  
 #accession S44473  
 #molecule\_type protein  
 #residues 1-30 #label NGU  
 #superfamily glucagon  
 #duplication; hormone; pancreas  
 KEYWORDS  
 FEATURE 1-30  
 #product glucagon-like peptide #status predicted #label MAT  
 SUMMARY #length 30 #molecular-weight 3359 #checksum 51.86  
 Query Match Score 113; DB 2; Length 30;  
 Best Local Similarity 56.7%; Pred. No. 1.02e-05;  
 Matches 17; Conservative 6; Mismatches 6; Indels 1; Gaps 1;  
 Db 1 HADGTY-TSDPSSFLQEQQAARDFISWLKKG 29  
 Qy 1 hsdgftfslskqmeearvliewlkng 30  
 RESULT 7  
 ENTRY #type complete  
 TITLE glucagon G1 - North American paddlefish (Polyodon spathula)  
 ORGANISM #formal\_name Polyodon spathula  
 DATE 18-Sep-1997 #sequence\_revision 18-Sep-1997 #text\_change  
 20-Mar-1998  
 S44471  
 ACCESSIONS  
 REFERENCE Nguyen, T.M.; Mounsen, T.P.; Mims, S.M.; Conlon, J.M.  
 Biochem. J. (1994) 300:339-345  
 Characterization of insulin and proglucagon-derived peptides from a phylogenetically ancient fish, the paddlefish (Polyodon spathula).  
 S44471  
 #molecule\_type protein  
 #residues 1-31 #label NGU  
 #experimental\_source pancreas  
 #classification #superfamily glucagon  
 #keywords carbohydrate metabolism; duplication; hormone; pancreas  
 FEATURE 1-31  
 #product glucagon G1 #status predicted #label MAT  
 SUMMARY #length 31 #molecular-weight 3751 #checksum 7808  
 Query Match Score 112; DB 2; Length 31;  
 Best Local Similarity 56.7%; Pred. No. 1.49e-05;  
 Matches 17; Conservative 5; Mismatches 7; Indels 1; Gaps 1;  
 Db 1 HSQGMF-TNDYSKYLEKRAKEFYEWLKNG 29  
 Qy 1 hsdgftfslskqmeearvliewlkng 30  
 RESULT 8  
 ENTRY #type fragment  
 TITLE glucagon - chinook salmon (fragment)  
 ORGANISM #formal\_name Oncorhynchus tshawytscha #common\_name chinook salmon  
 DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
 21-Nov-1997  
 S44474  
 ACCESSIONS  
 REFERENCE

#authors Irwin, D.M.; Wong, J.  
 #journal Mol. Endocrinol. (1995) 9:267-277  
 #title Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.  
 #date 20-Mar-1998  
 #cross-references EMBL:U19320; NID:9736366; PID:g736367  
 #accession 151093  
 #molecule\_type DNA  
 #residues 1-66 #label IRW  
 #cross-references EMBL:U19320; NID:9736366; PID:g736367  
 CLASSIFICATION #superfamily glucagon  
 KEYWORDS duplication  
 SUMMARY #length 66 #checksum 1440  
 Query Match Score 111; DB 2; Length 66;  
 Best Local Similarity 46.7%;  
 Matches 14; Conservative 10; Mismatches 5; Indels 1; Gaps 1;  
 Db 33 HADGTY-TSDVSTYLVQDQAAKDFYWSWLKG 61  
 Qy 1 hsdgftfslskqmeearvliewlkng 30  
 RESULT 9  
 ENTRY #type complete  
 TITLE glucagon I precursor - rainbow trout  
 ORGANISM #formal\_name Oncorhynchus mykiss #common\_name rainbow trout  
 DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
 21-Nov-1997  
 ACCESSIONS 151058; I51299; I51036; I51036; I51300  
 REFERENCE A55895  
 #authors Irwin, D.M.; Wong, J.  
 #journal Mol. Endocrinol. (1995) 9:267-277  
 #title Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.  
 #cross-references EMBL:U19320; NID:9736367  
 #accession 151058  
 #molecule\_type DNA  
 #residues 1-178 #label IRW  
 #cross-references EMBL:U19317; NID:9736364; GB:S78475;  
 NID:999384; PID:999385  
 #accession 151299  
 #molecule\_type RNA  
 #residues 1-178 #label IRW  
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 NID:999384; PID:999385  
 #accession 151056  
 #molecule\_type DNA  
 #residues 58-123 #label IR3  
 #cross-references EMBL:U19313; NID:9736360; PID:9736361  
 #accession 151037  
 #molecule\_type DNA  
 #residues 'M'..114-144 #label IR4  
 #cross-references EMBL:U19919; NID:9736374; PID:g736377  
 #accession 151036  
 #molecule\_type DNA  
 #residues 113-123 #label IR5  
 #cross-references EMBL:U19918; NID:9736373; PID:g736376  
 GENETICS #introns 123/2  
 #keywords #superfamily glucagon  
 #classification  
 #keywords duplication  
 SUMMARY #length 178 #molecular-weight 20034 #checksum 5250  
 Query Match Score 111; DB 2; Length 177;  
 Best Local Similarity 46.7%;  
 Matches 14; Conservative 10; Mismatches 5; Indels 1; Gaps 1;  
 Db 90 HADGTY-TSDVSTYLVQDQAAKDFYWSWLKG 118

Qy 1 :|||: ||||: ||||: ||: |||: |: |||: | hsdgfttsdkqmeeavrifewlkng 30

RESULT 10 I51057 #type complete  
ENTRY glucagon II precursor - rainbow trout  
TITLE #formal\_name Oncorhynchus mykiss #common\_name rainbow trout  
ORGANISM DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
21-Nov-1997

ACCESSIONS 151057; 151039; 151038  
REFERENCE #authors Irwin, D.M.; Wong, J.  
#journal Mol. Endocrinol.  
#title Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.  
#cross-references MUID:5295739  
#accession 151057  
#status preliminary; translated from GB/EMBL/DDJB  
#molecule\_type mRNA  
#residues 1-178 #label IRW  
#cross-references EMBL:U19914; NID:9736362; PID:9736363  
#accession 151039  
#status preliminary; translated from GB/EMBL/DDJB  
#molecule\_type DNA  
#residues 113-144 #label IR2  
#cross-references EMBL:U19916; NID:9736369; PID:9736372  
#accession 151038  
#status preliminary; translated from GB/EMBL/DDJB  
#molecule\_type DNA  
#residues 113-123 #label IR3  
#cross-references EMBL:U19915; NID:9736368; PID:9736371

GENETICS #introns 123/2  
CLASSIFICATION #superfamily glucagon  
KEYWORDS duplication  
SUMMARY #length 178 #molecular-weight 19998 #checksum 4464

Query Match Best Local Similarity 39.9%; Score 111; DB 2; Length 178;  
#text\_local\_similarity 46.7%; Pred. No. 2.19e-05;  
Matches 14; Conservative 10; Mismatches 5; Indels 1; Gaps 1;

Db 90 HADGTY-TSDVSTYQQDQAKEFVSWLKG 118  
|:|||: ||||: ||||: ||: |||: |: |||: | hsdgfttsdkqmeeavrifewlkng 30

RESULT 11 C61125 #type complete  
ENTRY glucagon-like peptide - European eel  
TITLE #formal\_name Anguilla rostrata #common\_name European eel  
ORGANISM DATE 10-Mar-1994 #sequence\_revision 10-Mar-1994 #text\_change  
21-Nov-1997

ACCESSIONS 61125  
REFERENCE #authors Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.  
#journal Gen. Comp. Endocrinol.  
#title The primary structure of glucagon-like peptide but not insulin has been conserved between the American eel, Anguilla rostrata and the European eel, Anguilla anguilla.  
#cross-references MUID:91340068  
#accession C61125  
#molecule\_type protein  
#residues 1-30 #label CON  
#superfamily glucagon  
#molecule\_end; duplication

COMMENT X's at positions 37-38 represent a pair of basic amino acids forming a cleavage site.

CLASSIFICATION #superfamily glucagon  
KEYWORDS carbohydrate metabolism; duplication; hormone; pancreas  
FEATURE

SUMMARY #length 30 #molecular-weight 3376 #checksum 6092

Query Match Best Local Similarity 39.6%; Score 110; DB 2; Length 30;  
#text\_local\_similarity 43.3%; Pred. No. 3.21e-05;  
Matches 13; Conservative 10; Mismatches 6; Indels 1; Gaps 1;

Db 1 HAEGTY-TSDVSTYQQDQAKEFVSWLKG 29  
|:|||: ||||: ||||: ||: |||: | hsdgfttsdkqmeeavrifewlkng 30

RESULT 12 B61125 #type complete  
ENTRY glucagon-like peptide - American eel  
TITLE #formal\_name Anguilla rostrata #common\_name American eel  
ORGANISM DATE 10-Mar-1994 #sequence\_revision 10-Mar-1994 #text\_change  
21-Nov-1997

ACCESSIONS 61125  
REFERENCE #authors Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.  
#journal Gen. Comp. Endocrinol.  
#title The primary structure of glucagon-like peptide but not insulin has been conserved between the American eel, Anguilla rostrata and the European eel, Anguilla anguilla.  
#cross-references MUID:91340068  
#accession B61125  
#molecule\_type protein  
#residues 1-30 #label CON  
#superfamily glucagon  
#molecule\_end; duplication

CLASSIFICATION #product glucagon-like peptide #status experimental  
FEATURE

SUMMARY #length 30 #molecular-weight 3376 #checksum 6092

Query Match Best Local Similarity 39.6%; Score 110; DB 2; Length 30;  
#text\_local\_similarity 43.3%; Pred. No. 3.21e-05;  
Matches 13; Conservative 10; Mismatches 6; Indels 1; Gaps 1;

Db 1 HAEGTY-TSDVSTYQQDQAKEFVSWLKG 29  
|:|||: ||||: ||||: ||: |||: | hsdgfttsdkqmeeavrifewlkng 30

RESULT 13 GGGXA #type fragment  
ENTRY glucagon precursor - alligator gar (fragment)  
ALTERNATE\_NAMES oxyntomodulin  
CONTAINS 1  
ORGANISM DATE 31-Mar-1993 #sequence\_revision 31-Mar-1993 #text\_change  
20-Mar-1998  
ACCESSIONS S06339; S06871  
REFERENCE #authors Pollock, H.G.; Kimmel, J.R.; Ebner, K.E.; Hamilton, J.W.;  
#journal Rouse, J.B.; Lance, V.; Rawitch, A.B.  
#title Gen. Comp. Endocrinol.  
#cross-references MUID:88196798  
#accession S06339  
#molecule\_type protein  
#residues 1-36 #label POL  
#accession S06871  
#molecule\_type protein  
#residues 1-39-72 #label P02  
COMMENT X's at positions 37-38 represent a pair of basic amino acids forming a cleavage site.

CLASSIFICATION #superfamily glucagon  
KEYWORDS carbohydrate metabolism; duplication; hormone; pancreas  
FEATURE

SUMMARY #length 30 #molecular-weight 3376 #checksum 6092

```

1-36      #product glucagon-36 (oxyntomodulin) #status
          experimental #label G36
1-29      #product glucagon #status predicted #label GCN\
          #product glucagon-like peptide 1 #status predicted
39-70     #label GL1 #length 72 #checksum 8055
SUMMARY

Query Match          39.6%; Score 110; DB 1; Length 72;
Best Local Similarity 46.7%; Pred. No. 3 21e-05;
Matches 14; Conservative 9; Mismatches 6; Indels 1; Gaps 1;
Db      39 HADGTV-TSDVSSYLDQAAKFKTNUKOG 67
Qy      1 hsdgfttsdksqmeeavrliewlkng 30

RESULT   14      GCAF2      #type complete
          TITLE      glucagon 2 precursor - American goosefish
          CONTAINS    glucagon; glucagon-like peptide 1
          ORGANISM   #formal_name Lophius americanus #common_name American
                      goosefish
                      .E.           31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change
          ACCESSION  A05150
          REFERENCE Lund, P.X.; Goodman, R.H.; Montminy, M.R.; Dee, P.C. ;
                      Habener, J.F.
          #cross-references GB:J00933; NID:G213352; PID:9213353
          CLASSIFICATION #superfamily glucagon
          KEYWORDS      carbohydrate metabolism; duplication; hormone; pancreas
FEATURE
          1-21      #domain signal sequence #status predicted #label SIG\_
          22-122    #product proglucagon 2 #status predicted #label PGC2\_
          52-80     #product glucagon #status predicted #label GCN\
          89-119    #product glucagon-like peptide 1 #status predicted
          #label GL1 #length 122 #molecular_weight 14171 #checksum 7194
SUMMARY

Query Match          39.2%; Score 109; DB 1; Length 122;
Best Local Similarity 46.7%; Pred. No. 4 70e-05;
Matches 14; Conservative 9; Mismatches 6; Indels 1; Gaps 1;
Db      39 HADGTV-TSDVSSYLDQAAKFKTNUKOG 117
Qy      1 hsdgfttsdksqmeeavrliewlkng 30

RESULT   15      GCNC       #type fragments
          ENTRY      glucagon precursor - coho salmon (fragments)
          CONTAINS    glucagon; glucagon-like peptide 1
          ORGANISM   #formal_name Oncorhynchus kisutch #common_name coho salmon
          DATE       30-Sep-1988 #sequence_revision 30-Sep-1988 #text_change
          20-Mar-1998
          ACCESSION A94232
          REFERENCE Plisetskaya, E.; Pollock, H.G.; Rouse, J.B.; Hamilton, J.W. ;
                      Kimmel, J.R.; Gordon, A.
          #journal   Regul. Pept. (1986) 14:57-67
          #title    Isolation and structure of coho salmon (Oncorhynchus kisutch)
          #cross-references NID:86234328
          #accession JP0103
          #molecule-type protein
          #residues 1-29;30-60 #label PLI

```





RESULT	5	STANDARD;	PRT;	30 AA.
ID	GLUM_ANGAN			
AC	P41521;			
DT	01-NOV-1995 (REL. 32, CREATED)			
DT	01-NOV-1995 (REL. 32, LAST SEQUENCE UPDATE)			
DT	01-NOV-1995 (REL. 32, LAST ANNOTATION UPDATE)			
DE	ANGUILLA ANGUILLA (EUROPEAN FRESHWATER EEL), AND OS ANGUILA ANGUILLA (AMERICAN EEL).			
OS	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPERYGI; NEOPTERYGI; OC TELEOSTEI; ANGUILIFORMES; ANGUILLIDAE; ANGUILLA; [1]			
RN	RP SEQUENCE.			
RC	TISSUE=PANCREAS;			
RX	MEDLINE; 91340068.			
RA	CONLON J.M., ANDREWS P.C., THIM L., MOON T.W.; RT "The primary structure of glucagon-like peptide but not insulin has been conserved between the American eel, <i>Anguilla rostrata</i> and the European eel, <i>Anguilla anguilla</i> ."			
RL	GEN. COMP. ENDOCRINOL. 82:23-32(1991).			
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.			
PIR	PIR: B61125; B61125;			
DR	PROSITE; PS00260; GLUCAGON; 1.			
DR	HSSP; PF00123; hormone2; 1.			
DR	PFAM; P0174; IGCN.			
KW	GLUCAGON FAMILY; AMIDATION.			
FT	MOD-RES 30 AMIDATION.			
SQ	SEQUENCE 30 AA; 3376 MW; 27E8C3D CRC32;			
Query Match	Score 110; DB 1; Length 30;			
Best Local Similarity	43.3%; Pred. No. 3.91e-06;			
Matches	13; Conservative 10; Mismatches 6; Indels 1; Gaps 1;			
Db	1 HAEGT-TSDVSSYLQDQAAKFVSWLKTG 29			
Qy	1 hsdgfttsdkskqmeearvifewlkng 30			
RESULT	6	STANDARD;	PRT;	78 AA.
ID	GLUC_DEPSP			
AC	P09566;			
DT	01-MAR-1989 (REL. 10, CREATED)			
DT	01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)			
DT	01-FEB-1994 (REL. 28, LAST ANNOTATION UPDATE)			
DE	GLUCAGON PRECURSOR (FRAGMENT)			
OS	LEPISOSTEUS SPATULUS (ALLIGATOR GAR) (ATRACTOSTEUS SPATULA).			
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPERYGI; NEOPTERYGI; SEMIONOTIFORMES; LEPTOSTEIDAE; LEPISOSTEUS.			
OC	[1]			
RN	RP PRELIMINARY SEQUENCE OF 1-29.			
RC	TISSUE=PANCREAS;			
RX	MEDLINE; 88196798.			
RA	POLLOCK H.G., KIMMEL J.R., HAMILTON J.W., ROUSE J.B., LANCE V., RAWITCH A.B.; "Isolation of alligator gar ( <i>Lepisosteus spatula</i> ) glucagon, insulin and pancreatic polypeptide."			
RA	RT Insulin and glucagon-like peptide."			
RT	RT oxymonodulin, and glucagon-like peptide."			
RL	GEN. COMP. ENDOCRINOL. 69:1133-140(1988).			
RN	RP PRELIMINARY SEQUENCE OF 1-36 AND 45-78.			
RC	TISSUE=PANCREAS;			
RX	MEDLINE; 88030594.			
RA	POLLOCK H.G., KIMMEL J.R., HAMILTON J.W., ROUSE J.B., LANCE V., RAWITCH A.B.; "Isolation and structures of alligator gar ( <i>Lepisosteus spatula</i> ) insulin and pancreatic polypeptide."			
RA	RT Insulin and glucagon-like peptide."			
RT	RT oxymonodulin, and glucagon-like peptide."			
RL	GEN. COMP. ENDOCRINOL. 67:375-382(1987).			
CC	THE BLOOD SUGAR LEVEL.			
CC	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.			
CC	-!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN GOOSEFISH SEQUENCES.			
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.			
DR	PIR; S06139; GCGXA.			
DR	PROSITE; PS00260; GLUCAGON; 2.			
DR	PFAM; PF00123; hormone2; 2.			
DR	HSSP; P01274; IGCN.			
KW	GLUCAGON FAMILY; HORMONE.			
FT	PEPTIDE 1 29			
FT	PEPTIDE 1 36			
FT	PEPTIDE 1 78			
FT	SEQUENCE 78 AA; 8990 MW; 509ED93 CRC32;			
Query Match	Score 110; DB 1; Length 78;			
Best Local Similarity	46.7%; Pred. No. 3.91e-06;			
Matches	14; Conservative 9; Mismatches 6; Indels 1; Gaps 1;			
Db	45 HADGNY-TSDVSSYLQDQAAKFVSWLKG 73			
Qy	1 hsdgfttsdkskqmeearvifewlkng 30			
RESULT	7	STANDARD;	PRT;	122 AA.
ID	GLU2_LOPAM			
AC	P04052;			
DT	01-NOV-1986 (REL. 03, CREATED)			
DT	01-NOV-1986 (REL. 03, LAST SEQUENCE UPDATE)			
DT	15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)			
DE	GLUCAGON II PRECURSOR.			
OS	LOPHIUS AMERICANUS (AMERICAN GOOSEFISH) (ANGLERFISH).			
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPERYGI; NEOPTERYGI; OSTEOSTEI; EUSTELEOSTEI; PARACANTHOPTERYGI; LOPHIIFORMES; LOPHIIDAE; LOPHIUS.			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RX	MEDLINE; 83135785.			
RA	LUND P.K., GOODMAN R.H., MONTMINY M.R., DEE P.C., HABENER J.F.; "Anglerfish islet pre-proglucagon II. Nucleotide and corresponding amino acid sequence of the cDNA."			
RT	J. BIOL. CHEM. 258:3280-3284(1983).			
RL	[2]			
RP	PROCESSING.			
RX	MEDLINE; 86286913.			
RA	NOE B.D., ANDREWS P.C.; "Specific glucagon-related peptides isolated from anglerfish islets are metabolic cleavage products of (pre)proglucagon-II."			
RT	RT PEPTIDES 7:331-339(1986).			
CC	-!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.			
CC	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.			
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.			
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CC	[1]			
CC	SEQUENCE OF 1-36 AND 45-78.			
CC	TISSUE=PANCREAS.			
CC	MEDLINE; 88196798.			
RA	POLLOCK H.G., KIMMEL J.R., HAMILTON J.W., ROUSE J.B., LANCE V., RAWITCH A.B.; "Isolation and structures of alligator gar ( <i>Lepisosteus spatula</i> ) glucagon, insulin and pancreatic polypeptide."			
RA	RT Insulin and glucagon-like peptide."			
RT	RT oxymonodulin, and glucagon-like peptide."			
RL	GEN. COMP. ENDOCRINOL. 69:1133-140(1988).			
RN	RP PRELIMINARY SEQUENCE OF 1-29.			
RC	TISSUE=PANCREAS;			
RX	MEDLINE; 88030594.			
RA	POLLOCK H.G., KIMMEL J.R., HAMILTON J.W., ROUSE J.B., LANCE V., RAWITCH A.B.; "Isolation and structures of alligator gar ( <i>Lepisosteus spatula</i> ) glucagon, insulin and pancreatic polypeptide."			
RA	RT Insulin and glucagon-like peptide."			
RT	RT oxymonodulin, and glucagon-like peptide."			
RL	GEN. COMP. ENDOCRINOL. 67:375-382(1987).			
CC	THE BLOOD SUGAR LEVEL.			
CC	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.			
CC	-!- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN GOOSEFISH SEQUENCES.			
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.			
DR	PIR; A05150; GCGXA.			
DR	PROSITE; PS00260; GLUCAGON; 2.			
DR	PFAM; PF00123; hormone2; 2.			
DR	HSSP; P01274; IGCN.			
KW	GLUCAGON FAMILY; HORMONE.			
FT	SIGNAL 1 21			
FT	PEPTIDE 22 49			
FT	PEPTIDE 52 80			
FT	PEPTIDE 89 119			
FT	SEQUENCE 122 AA; 14171 MW; DPER63061 CRC32;			

Query Match	39.2%	Score 109; DB 1; Length 122;
Best Local Similarity	46.7%;	Pred. No. 5.95e-06;
Matches 14;	Conservative 9;	Mismatches 6;
Indels 1;	Gaps 1;	
Db	89 HADGTY-TSVPSSYLLDQAKDFVSWLKG 117	
Qy	1 hsdgtfitsdlskqmeearvifewlkng 30	
RESULT	8	
ID	GLUC_ONC1	STANDARD;
PRT;	68 AA.	
AC	P07449;	
DT	01-APR-1988 (REL. 07, CREATED)	
DT	01-APR-1988 (REL. 07, LAST SEQUENCE UPDATE)	
DR	"GLUCAGON PRECURSOR (FRAGMENT, REL. 16, LAST ANNOTATION UPDATE)"	
RA	GOREMAN A.;	
RA	"Isolation and structures of coho salmon (Oncorhynchus kisutch) RT Glucagon and glucagon-like peptide.";	
RL	REGUL. PEPT. 14:57-67(1986).	
CC	-!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	
CC	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.	
CC	-!- Y'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH AMERICAN GOOSEFISH SEQUENCES.	
CC	-!- GLN14 IS A UNIQUE SUBSTITUTION FROM LEUCINE IN OTHER KNOWN GLUCAGON SEQUENCES AND GLUCAGON-LIKE PEPTIDES.	
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	
DR	PTR: JPO103; GCONC	
DR	PROSITE: PS00260; GLUCAGON; 2.	
DR	PFAM: PF00123; hormone; 2.	
DR	HSSP: P01274; IGCN	
KW	GLUCAGON FAMILY; HORMONE.	
NON_TER	1	1
PEPTIDE	1	29
PEPTIDE	38	68
NON_TER	68	68
SEQUENCE	68 AA;	7810 MW;
		402855D1 CRC32;
Query Match	38.8%	Score 108; DB 1; Length 68;
Best Local Similarity	43.3%;	Pred. No. 9.03e-06;
Matches 13;	Conservative 11;	Mismatches 5;
Indels 1;	Gaps 1;	
Db	38 HADGTY-TSVPSSYLLDQAKDFVSWLKG 66	
Qy	1 hsdgtfitsdlskqmeearvifewlkng 30	
RESULT	9	
ID	GLUC_CARAU	STANDARD;
PRT;	121 AA.	
AC	P79695;	
DT	01-NOV-1997 (REL. 35, CREATED)	
DT	01-NOV-1997 (REL. 35, LAST SEQUENCE UPDATE)	
DT	"GLUCAGON PRECURSOR"	
OS	CARASSIUS AURATUS (GOLDFISH).	
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;	
OC	CYPRINIDAE; CYPRINIFORMES; CYPRINOIDEA;	
RN	[1]	
RP	SEQUENCE FROM N.A.	
RA	YUEN T.T.H., MOK P.Y., CROW B.K.C.;	
RL	SUBMITTED (PEB-1997) TO EMBL/GENEBANK/DDJB DATA BANKS.	

CC	-!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	
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CC	EMBL; U55528; G1762777; DR; PROSITE; PS00260; GLUCAGON; 2.	
DR	PFAM; PF00123; hormone; 2.	
DR	HSSP; P01274; IGCN.	
KW	GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL-POTENTIAL.	
FT	peptide 21	
FT	peptide 22	
FT	peptide 47	
FT	peptide 50	
FT	peptide 78	
FT	peptide 88	
FT	peptide 121	
SQ	SEQUENCE 121 AA; 13527 MW; DDB667CE CRC32;	
Query Match	38.8%; Score 108; DB 1; Length 121;	
Best Local Similarity	43.8%; Pred. No. 9.03e-06;	
Matches 14;	Conservative 10; Mismatches 7; Indels 1; Gaps 1;	
DB	88 HAEGTY-TSDISFSFLRDOAQNFVAKLKGQP 118	
QY	1 hsdgtfitsdlskqmeearvifewlkng 32	
RESULT	10	
ID	GLUC_SOYCA	STANDARD;
PRT;	29 AA.	
AC	P09687;	
DT	01-MAR-1989 (REL. 10, CREATED)	
DT	01-MAR-1989 (REL. 10, LAST SEQUENCE UPDATE)	
DT	01-JAN-1990 (REL. 13, LAST ANNOTATION UPDATE)	
DE	GLUCAGON.	
OS	SCYLLOTHRINUS CANICULA (SPOTTED CATSHARK), (SPOTTED CATSHARK).	
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; CHONDRICHTHYES;	
OC	ELASMODRANCHII; CARCHARHINIFORMES; SCYLLOTHRINAE; SCYLLOTHRINUS.	
RN	[1]	
RP	SEQUENCE.	
RC	TISSUE-PANCREAS;	
RX	MEDLINE: 8719093.	
RA	CONLON J.M., OTTOOLE L., THIM L.;	
RA	"Primary structure of glucagon from the gut of the common dogfish (Scylliorhinus canicula)." FEBS LETT. 214:50-56(1987).	
RR	-!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCogen AND LIPIDS, AND RAISES THE BLOOD SUGAR LEVEL.	
RR	-!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.	
CC	-!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.	
DR	PIR: A26992; GCDP.	
DR	PROSITE; PS00260; GLUCAGON; 1.	
DR	PFAM; PF00123; hormone; 2.	
DR	HSSP; P01274; IGCN.	
KW	GLUCAGON FAMILY; HORMONE.	
SEQUENCE	29 AA;	3529 MW;
		8CFE41FB CRC32;
Query Match	38.1%; Score 106; DB 1; Length 29;	
Best Local Similarity	51.7%; Pred. No. 2.07e-05;	
Matches 15;	Conservative 7; Mismatches 6; Indels 1; Gaps 1;	
DB	1 HSEGTF-TSDYSKYMDNRRAKDFYQWLN 28	
QY	1 hsdgtfitsdlskqmeearvifewlkng 29	
RESULT	11	
ID	GLU1_LOPAM	STANDARD;
PRT;	124 AA.	

AC P01278; 21-JUL-1986 (REL. 01; CREATED)  
DT 21-JUL-1986 (REL. 01; LAST SEQUENCE UPDATE)  
DT 15-DEC-1998 (REL. 37; LAST ANNOTATION UPDATE)

DE GLUCAGON I PRECURSOR.

CC LOPHIUS, AMERICAN (AMERICAN GOOSEFISH) (ANGLERFISH).

CC EUKARYOTA; METAZOA; CHORDATA; Vertebrata; ACTINOPTERYGII; NEOPTERYGII;

OC TELEOSTEI; EUTELEOSTEI; PARACANTHOPTERYGII; LOPHIIFORMES; LOPHIIDAE;

OC LOPHIUS.

[1] RN SEQUENCE FROM N.A.  
RP MEDLINE; 82197492.

RA LUND P.K.; GOODMAN R.H.; DEE P.C.; HABENER J.F.;  
PT "Pancreatic preproglucagon cDNA contains two glucagon-related coding  
sequences arranged in tandem";  
RL PROC. NATL. ACAD. SCI. U.S.A. 79: 345-349 (1982).

[2] RN SEQUENCE OF 51-83 FROM N.A.  
RX MEDLINE; 91215615.

RA LUND P.K.; GOODMAN R.H.; HABENER J.F.;  
PT "Pancreatic pre-proglucagons are encoded by two separate mRNAs.";  
RL J. BIOL. CHEM. 256:6515-6518 (1981).

[3] SEQUENCE OF 53-81 AND 91-124.  
RX MEDLINE; 99064585.

RA NICHOLS R.; LEE T.D.; ANDREWS P.C.;  
PT "Pancreatic proglucagon processing: isolation and structures of  
glucagon and glucagon-like peptide from gene I.";  
RL ENDOCRINOLOGY 123:2639-2645 (1988).

CC !- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.

CC !- INDUCTION: PRODUCED IN THE CELLS OF THE ISLETS OF LANGERHANS  
IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.

CC !- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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or send an email to [licensee@isb-sib.ch](mailto:licensee@isb-sib.ch)).

CC DR V00633; G64024; -.  
DR EMBL; J00932; G21351; -.

DR PIR; A01543; GCAF.

DR S06458; S06458.

DR PROSITE; PS00260; GLUCAGON; 2.

DR PFAM; PF00123; hormone2; 2.

DR HSSP; D01274; 1IGCN.

GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.

SIGNAL 1 ?  
PEPTIDE 2 50 GRPP (GLICENTINE RELATED POLYPEPTIDE).

FT PEPTIDE 53 81 GLUCAGON I.

FT PEPTIDE 91 124 GLUCAGON-LIKE PEPTIDE I.

SQ SEQUENCE 124 AA; 14165 MW; F2A1DCDA CRC32; KW 3D-STRUCTURE.

Query Match 37.4%; Score 104; DB 1; Length 124;  
Best Local Similarity 46.7%; Pred. No. 4.72e-05;  
Matches 14; Conservative 10; Mismatches 5; Indels 1; Gaps 1;

Db 91 HADGTF-TSDVSSYLKDQAIKDFVDRILKAG 119  
QY 1 hsdfitfslskmeeeavrifewlkng 30

RESULT 12 GLUC-PIG STANDARD; PRT; 158 AA.

t,r p0174; 21-NOV-1986 (REL. 01; CREATED)  
DT 01-NOV-1990 (REL. 16; LAST SEQUENCE UPDATE)  
DI 15-DEC-1998 (REL. 37; LAST ANNOTATION UPDATE)

GLUCAGON PRECURSOR (FRAGMENT).

GN GCG . SCROFA (PIG).  
OS SUS . SCROFA (PIG). CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;  
OC EUKARYOTA; METAZOA; CHORDATA; Vertebrata; ACTINOPTERYGII; NEOPTERYGII;  
OC ARTIODACTYLA; SUIFORMES; SUINA; SUIDAE; SUS.  
RN [1]  
RP SEQUENCE; MEDLINE; 81248172.  
RX THIM L.; MOODY A.J.;  
PT "The primary structure of porcine glicentin (proglucagon)." ;  
RL REGUL. PEPT. 2:139-150(1981).  
RN [2]  
RP SEQUENCE; MEDLINE; 82221776.  
RX THIM L.; MOODY A.J.;  
PT "The amino acid sequence of porcine glicentin." ;  
RL PEPTIDES 2 SUPPL. 2:37-39(1981).  
RN [3]  
RP SEQUENCE OF 33-61.  
RA BROMER W.W.; SINN L.G.; BEKKENS O.K.;  
PT "The amino acid sequence of glucagon. V. Location of amide groups,  
acid degradation studies and summary of sequential evidence." ;  
RL J. AM. CHEM. SOC. 79:2807-2810(1957).  
RN [4]  
RP SEQUENCE OF 78-107.  
RX MEDLINE; 89327238.  
RA ORSKOV C.; BERSANI M.; JOHNSEN A.H.; HOEJRUP P.; HOLST J.J.;  
PT "Complete sequences of glucagon-like peptide-1 from human and pig  
small intestine." ;  
RT J. BIOL. CHEM. 264:12826-12829(1989).  
RN [5]  
RP SEQUENCE OF 111-158.  
RX MEDLINE; 8843712.  
RA BULH T.; THIM L.; KOFOD H.; ORSKOV C.; HARLING H.-J.; HOLST J.J.;  
PT "Naturally occurring products of proglucagon 111-160 in the porcine  
and human small intestine." ;  
RL J. BIOL. CHEM. 263:8621-8624(1988).  
RN [6]  
RP X-RAY CRYSTALLOGRAPHY (3.0 ANGSTROMS).  
RX MEDLINE; 76051297.  
RA SASAKI K.; DOCKERILL S.; ADAMIAK D.A.; TICKLE I.J.; BLUNDELL T.L.;  
PT "X-ray analysis of glucagon and its relationship to receptor  
binding." ;  
RL NATURE 257:751-757(1975).  
CC !- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES  
THE BLOOD SUGAR LEVEL.  
CC !- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
CC IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
CC !- X'S IN THE SEQUENCE WERE INCLUDED BY HOMOLOGY WITH HUMAN  
CC SEQUENCE.  
CC !- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
DR PIR; A01540; GCPG.  
DR PDB; 1GCN; 30-SEP-83.  
DR PROSITE; PS00260; GLUCAGON; 3.  
DR PFAM; PF00123; hormone2; 3.  
DR HSSP; D01274; 1IGCN FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES;  
KW 3D-STRUCTURE.

NON-TER 1 1 1  
FT PEPTIDE 1 30 GRPP (GLICENTINE RELATED POLYPEPTIDE).  
FT PEPTIDE 33 61 GLUCAGON.  
FT PEPTIDE 78 107 GLUCAGON-LIKE PEPTIDE 1.  
FT PEPTIDE 126 158 GLUCAGON-LIKE PEPTIDE 2.

FT HELIX 39 42  
FT TURN 43 45  
FT TURN 56 57  
SQ SEQUENCE 158 AA; 18212 MW; 9FBCLBFE CRC32;

Query Match 37.4%; Score 104; DB 1; Length 158;  
Best Local Similarity 50.0%; Pred. No. 4.72e-05;  
Matches 15; Conservative 7; Mismatches 7; Indels 1; Gaps 1;

Db 78 HAEGTF-TSDVSSYLKDQAIKDFVDRILKAG 106







RX MEDLINE; 97368292.  
 RA IRWIN D.M.; SATKONARAJAH M.; WEN Y.; BRUBAKER P.L.; PEDERSON R.A.;  
 RA WHEELER M.B.;  
 RT "The Xenopus proglucagon gene encodes novel GLP-1-like peptides with insulinotropic properties.";  
 RT PROC. NATL. ACAD. SCI. U.S.A. 94:7915-7920(1997).  
 RL EMBL; AF004433; G2305018; -.  
 DR PROSITE; PS00260; GLUCAGON; 3.  
 DR PFAM; PF00123; 45C42A88 CRC32;  
 SQ SEQUENCE 219 AA; 25271 MW;

Query Match 3 Local Similarity 51.1%; score 142; DB 13; Length 219;  
 Best Local Matches 17; Conservative 10; Mismatches 5; Indels 1; Gaps 1;  
 Pred. No. 2.38e-11; PRT: 66 AA.

RESULT 3 PRELIMINARY;  
 ID Q91188  
 AC Q91188;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

DE GLUCAGON (FRAGMENT).  
 OS ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).  
 EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;  
 ONCORHYNCHUS.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RC TISSUE=PANCREAS;  
 RX MEDLINE; 95295739.  
 RA IRWIN D.M.; WONG J.;  
 RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";  
 RL MOL-ENDOCRINOL; 9:267-277(1995).  
 DR EMBL; U19913; G736361; -.  
 DR PFAM; PF00123; hormone2; 2.  
 FT NON-TER 1  
 SQ SEQUENCE 66 AA; 7680 MW; 62C57652 CRC32;

Query Match 3 Local Similarity 46.7%; score 111; DB 13; Length 66;  
 Best Local Matches 14; Conservative 10; Mismatches 5; Indels 1; Gaps 1;  
 Pred. No. 1.03e-05; PRT: 72 AA.

RESULT 4 PRELIMINARY;  
 ID Q91188  
 AC Q91188;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DE PROGLUCAGON (FRAGMENT).  
 OS ONCORHYNCHUS TSCHAWYTSCHA (CHINOOK SALMON) (KING SALMON).  
 EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;  
 ONCORHYNCHUS.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RX MEDLINE; 95295739.  
 RA IRWIN D.M.; WONG J.;  
 RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";  
 RL MOL-ENDOCRINOL; 9:267-277(1995).  
 DR EMBL; U19913; G736361; -.  
 DR PROSITE; PS00260; GLUCAGON; 3.  
 DR PFAM; PF00123; hormone2; 3.  
 SQ SEQUENCE 178 AA; 20034 MW; 2056F963 CRC32;

Query Match 4 Local Similarity 39.9%; score 111; DB 13; Length 178;  
 Best Local Matches 14; Conservative 10; Mismatches 5; Indels 1; Gaps 1;  
 Pred. No. 1.03e-05;





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MOHAM-312-CLAIM83A.PEP.RSPt

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SEQUENCE FROM N.A.  
RP STRAIN=PCC6803;  
RC MEDLINE; 97061201.  
RX SATO S., KOTANI H., TANAKA A., ASAMIZU E., NAKAMURA Y.,  
RA KANERU T., MIYAJIMA N., HIROSAWA M., SUGIURA M., SASAMOTO S., KIMURA T.,  
RA MIYAJIMA N., HIROSAWA M., SASAMOTO S., KIMURA T.,  
RA NARUDO K., OKUDURA S.,  
RA HOSOUCHI T., MATSURO A., MURAKI A., NARAZAKI N., NARUDO K., OKUDURA S.,  
RA SHIMPO S., TAKEUCHI C., WADA T., WATANABE A., YAMADA M., YASUDA M.,  
RA TABATA S.;  
RT "Sequence analysis of the genome of the unicellular cyanobacterium  
Synechocystis sp. PCC6803. II. Sequence determination of the entire  
genome and assignment of potential protein-coding regions.";  
RT DNA RES. 3:109-136(1996).  
RL D64003; D101091; -  
DR EMBL; D64003; D101091; -  
KW HYPOTHETICAL PROTEIN.  
SQ SEQUENCE 1319 AA; 151893 MW; BB2F4ACB CRC32;  
Query Match 29.5%; Score 82; DB 2; Length 1319;  
Best Local Similarity 34.6%; Prd. No. 5.50e-01;  
Matches 9; Conservative 8; Mismatches 9; Indels 0; Gaps 0;  
Db 594 FLESELYPQLODSDLVIALDWIKTQG 619  
6 fitsdlskqmeavrlfiewlkngg 31

Search completed: Mon Oct 4 15:29:34 1999  
Job time : 14 secs.



Qy 1 hgegtfftsdlskqmeearvrliewlknggppsgappps 40

RESULT 2

ID R80546 standard; peptide; 39 AA.

AC R80546;

DT 27-FEB-1996 (first entry)

DE Heloderma suspectum exendin-4.

KW Exendin-4; diabetes mellitus; hyperglycaemia; insulinotropic peptide.

OS Heloderma suspectum.

LN US5424285-A.

PD 13-JUN-1995

PR 24-MAY-1993; 056480; 40

PA 24-MAY-1993; 056480; 40

PA (ENGL.) ENG J.

PA (ENGL.) ENG J.

Eng J,

WPI: 95-262627/34.

Stimulating/inhibiting insulin release with exendin polypeptide(s) - for treating diabetes mellitus and preventing hyperglycaemia.

PT Claim 6; Column: 13-14; 17PP; English.

PS R80546 is Heloderma suspectum exendin-4. It is an insulinotropic peptide, and can therefore be used in the treatment of diabetes mellitus (types I or II), and for the prevention of hyperglycaemia. It normalises hyperglycaemia through glucose-dependent and insulin-(in)dependent mechanisms.

SQ Sequence 39 AA;

Query Match Score 93.6%; Best Local Similarity 97.5%; Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1; Sequence 39 AA;

CC imaging.

CC Exendins, components of Gila monster venom, have some sequence similarity to glucagon-like peptides (GLP). They are GLP agonists and have been suggested (US5424286) for treatment of diabetes and prevention of hyperglycaemia.

CC Sequence 39 AA;

CC

Query Match Score 93.6%; Best Local Similarity 97.5%; Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1; Sequence 39 AA;

CC

RESULT 4

ID W70288 standard; Protein; 87 AA.

AC W70288;

DT 06-NOV-1998 (first entry)

DE Heloderma suspectum proexendin peptide.

KW Heloderma suspectum proexendin; exendin N-terminal peptide; ENPP; exendin 3 gene; Heloderma horridum; metabolic disease; drug screening; endocrine tumour; organ failure; cell metabolism; diabetes; reptilian venom peptide.

OS Heloderma suspectum.

Key

FH Location/Qualifiers

FT Peptide 1..23 /note= "Signal peptide"

FT Peptide 1..47 /note= "BNTP"

FT Peptide 48..87 /note= "Exendin 4"

FT Peptide 46..47 /note= "Dipeptidyl peptidase cleavage site"

FT Peptide /note= "Dipeptidyl peptidase cleavage site"

PN WO9835033-A1.

PD 13-AUG-1998.

PF 04-FEB-1998; CA0071.

PR 07-FEB-1997; GB-002582.

PR 05-FEB-1997; US-037412.

PA (ONEO-) 1149336 ONTARIO INC.

PI Drucker DJ;

DR WPI; 98-441230/38.

DR N-PSDB; V33163.

PN New nucleic acid encoding proexendin - used to diagnose and treat, e.g. endocrine tumours, also to treat poisoning by reptile venom

PT Claim 3; Fig 2; 26PP; English.

PS The Heloderma suspectum proexendin peptide is encoded by its cDNA library.

CC The peptide was isolated from a H. suspectum salivary gland cDNA library.

CC The proexendin protein comprises of a novel exendin N-terminal peptide (ENPP) linked to the N-terminus of the exendin 4 peptide by a consensus dipeptidyl peptidase cleavage site. The proexendin peptide can be used to clone or identify related sequences (e.g. the exendin 3 gene of Heloderma horridum, mutant alleles and proexendin gene regulatory defects associated with metabolic disease and species homologues (e.g. for developing animal models for drug screening)).

CC The proexendin peptide can be used to raise antibodies. Anti-proexendin antibodies are claimed to be useful for diagnosing conditions associated with altered levels of Proexendin (e.g. endocrine tumours and organ failure), for identifying other regulators of cell metabolism, in drug screens and for treating metabolic diseases (e.g. diabetes) and for neutralising, or detecting, reptilian venom peptides.

SQ Sequence 87 AA;

Query Match Score 93.6%; Best Local Similarity 97.5%; Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

CC

RESULT 3

ID W47609 standard; peptide; 39 AA.

AC W47609;

DT 03-JUL-1998 (first entry)

DE Gila monster exendin-4.

KW Exendin agonist; gastric motility; gastric emptying; treatment; spasm; postprandial dumping syndrome; postprandial hyperglycaemia; type 1 diabetes; impaired glucose tolerance; toxin ingestion; obesity; Gila monster venom; exendin-4.

KW Heloderma suspectum.

Key

FT Modified\_site 39 /note= "amidated"

FT Location/Qualifiers

PN WO9805351-A1.

PD 12-FEB-1998.

PF 08-AUG-1997; U14199.

PR 08-AUG-1996; US-619954.

PA (AMYLIN) AMYLIN PHARM INC.

PI Beeley NRA, Gedulin B, Prickett KS, Young AA;

DR WPI; 98-145351/13.

PT Regulating gastrointestinal motility using exendins or their agonists - for treating spasm, diabetic postprandial hyperglycaemia, impaired glucose tolerance etc., also in diagnostic investigations

PT claims 20 and 21; Fig 1; 70pp; English.

PS W47540 describes a generic exendin agonist, provided that it does have the formula of either exendin-3 (W47608) or exendin-4 (W47609).

CC Exendin agonists, which reduce gastric motility and delay gastric emptying, can be used to treat spasm (where associated with acute diverticulitis or disorders of the biliary tract or sphincter of Oddi), postprandial dumping syndrome and hyperglycaemia (particularly associated with type 2 diabetes), type 1 diabetes, impaired glucose tolerance, toxin ingestion (an exendin agonist is administered to prevent stomach contents passing into the intestines, then the stomach pumped and obviates). They can also be administered to subjects undergoing gastrointestinal diagnostic investigation, particularly radiological or by magnetic resonance

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PR	08-AUG-1997; US-055404.	PA	(ENGL/)	ENG J.
PR	14-NOV-1997; US-065442.	PI	Eng J;	
PA	(AMYL) AMYLIN PHARM INC.	DR	WPI; 95-262627/34.	
PI	Beeley NRA, Bhavari S, Prickett KS;	PT	Stimulating/inhibiting insulin release with exendin polypeptide(s) -	
DR	WPI; 98-398796/34.	PT	for treating diabetes mellitus and preventing hyperglycaemia.	
PT	Reducing food intake by administering exendins or their	PR	Claim 1; Columns 13-14; 17pp; English.	
PT	analogues - for treatment of e.g. obesity, type II diabetes	PS	R80543 is the Heloderma suspectum exendin-4 residues 1-31. It is an	
PT	eating disorders and insulin resistance	CC	insulinotropic Peptide, and can therefore be used in the treatment of	
PS	Claims 18, 26; Page 12; 214pp; English.	CC	diabetes mellitus (types I or II), and for the prevention of	
CC	The invention relates to a new method for treating disorders that	CC	hyperglycaemia. It normalises hyperglycaemia through glucose-dependent	
CC	are alleviated by reducing food intake, in particular obesity, type	CC	CC and insulin-(in)dependent mechanisms.	
CC	II diabetes, eating disorders, insulin resistance syndrome, elevated	SQ	Sequence 31 AA;	
CC	plasma glucose levels, or the risk of cardiac disease. The method	Query Match	Score 216; DB 14; Length 31;	
CC	comprises administering an exendin or an exendin agonist. The treatment	Best Local Similarity 96.9%; Pred. No. 2.79e-11;		
CC	reduces appetite and lowers plasma lipid levels. It inhibits food	Mismatches 0; Indels 1; Gaps 1;		
CC	consumption as effectively as amylin or cholecystokinin but has a much			
CC	longer-lasting action (still effective after 6 hours in a mouse model).			
CC	The present sequence is that of an exendin-4 variant which is one of			
CC	the preferred compounds for use in the method.			
SQ	Sequence 39 AA;	Qy	1 hgegtf-tsdliskmeeeeavrifewlkngqgp 31	
Query Match	84.7%; Score 238; DB 39; Length 39;	Qy	1 hgegtf-tsdliskmeeeeavrifewlkngqgp 32	
Best Local Similarity 92.5%; Pred. No. 2.40e-13;	Matches 37; Conservative 1; Indels 1; Gaps 1;	RESULT 11		
DB	1 hgegtf-tsdliskmeeeeavrifewlkngqgpssgappss 39	ID	W61771 standard; peptide: 30 AA.	
Qy	1 hgegtf-tsdliskmeeeeavrifewlkngqgpssgappss 40	ID	W61771; AC W61771;	
RESULT 9		AC	W61771; DR 29-MAR-1999 (first entry)	
ID	R80547 standard; peptide: 31 AA.	DE	Exendin-4 (1-30) for use in treating disorders related to food intake.	
AC	R80547;	DE	Exendin; obesity; type II diabetes; eating disorders; cardiac disease;	
DT	27-FEB-1996 (first entry)	KW	insulin resistance syndrome; elevated plasma glucose level; agonist.	
DE	Heloderma suspectum exendin-4 residues 9-39 (Exendin-4(9-39)).	OS	Heloderma suspectum.	
KW	Exendin-4; residues 9-39; Exendin (9-39);	FH	Key 9 Location/Qualifiers	
KW	insulinotropic peptides; inhibitor.	FT	Modified_site 30	
OS	Heloderma suspectum.	FT	/note= "Optionally the C-terminal is in amide form"	
PN	US5424286-A.	FT		
PD	13-JUN-1995.	FT		
PF	24-MAY-1993; 066480.	FT		
PF	24-MAY-1993; US-066480.	FT		
PA	(ENGL/)	FT		
PA	Eng J.	FT		
PI	WPI; 95-262627/34.	FT		
PI	Stimulating/inhibiting insulin release with exendin polypeptide(s) -	FT		
CC	for treating diabetes mellitus and preventing hyperglycaemia.	FT		
PS	Claim 7; Columns 13-14; 17pp; English.	FT		
CC	R80547 is the Heloderma suspectum exendin-4 residues 9-39. It	FT		
CC	is an insulinotropic peptide activity inhibitor.	FT		
SQ	Sequence 31 AA;	FT		
Query Match	78.3%; Score 220; DB 14; Length 31;	FT		
Best Local Similarity 100.0%; Pred. No. 1.18e-11;	Matches 31; Conservative 0; Mismatches 0; Indels 0; Gaps 0;	FT		
DB	1 dlskomeeeavrifewlkngqgpssgappss 31	FT		
Qy	10 dlskomeeeavrifewlkngqgpssgappss 40	FT		
RESULT 10		FT		
ID	R80543 standard; peptide: 31 AA.	FT		
AC	R80543;	FT		
DT	27-FEB-1996 (first entry)	FT		
DE	Heloderma suspectum exendin-4 residues 1-31 (Exendin-4(1-31)).	FT		
KW	Exendin-4; residues 1-31; Exendin-4(1-31); diabetes mellitus;	FT		
KW	hyperglycaemia; insulinotropic Peptide.	FT		
OS	Heloderma suspectum.	FT		
PN	US5424286-A.	FT		
PD	13-JUN-1995.	FT		
PF	24-MAY-1993; 066480.	FT		
PF	24-MAY-1993; US-066480.	FT		
PA	(ENGL/)	FT		
PA	Eng J.	FT		
PI	WPI; R80544.	FT		
PI	standard; peptide: 31 AA.	FT		
FT	AC R80544;	FT		
FT	DR 27-FEB-1996 (first entry)	FT		
DE	Heloderma suspectum exendin-4 residues 1-31-Tyr31.	FT		
RESULT 12		FT		
ID	R80544 standard; peptide: 31 AA.	FT		
AC	R80544;	FT		
DR	27-FEB-1996 (first entry)	FT		
DE	Heloderma suspectum exendin-4 residues 1-31-Tyr31.	FT		

KW Exendin-4; residues 1-31; Y-31-Exendin-4(1-31); diabetes mellitus;  
 KW hyperglycaemia; Tyr31; insulinotropic peptide.  
 OS Heloderma suspectum.  
 PN US5424286-A.  
 PD 13-JUN-1995.  
 PF 24-MAY-1993; 066480.  
 PR 24-MAY-1993; US-066480.  
 PA (ENGL) ENG J.  
 PI Eng J;  
 WPI; 95-26267/34.  
 PT Stimulating/inhibiting insulin release with exendin polypeptide(s) -  
 for treating diabetes mellitus and preventing hyperglycaemia.  
 PS Claim 2; Columns 13-14; 17PP; English.  
 CC R80544 is the Heloderma suspectum exendin-4 residues 1-31, where  
 the native Pro31 has been replaced with a Tyr residue. It is an  
 insulinotropic peptide, and can therefore be used in the treatment of  
 diabetes mellitus (types I or II), and for the prevention of  
 hyperglycaemia. It normalises hyperglycaemia through glucose-dependent  
 and insulin-(in)dependent mechanisms.  
 CC Sequence 31 AA;

Query Match 74.0%; Score 208; DB 14; Length 31;  
 best Local Similarity 96.8%; Pred. No. 1.56e-10;  
 identities 30; Conservative 0; Mismatches 0; Indels 1; Gaps 1;  
 FT /note= "This residue can be any amino acid except  
 Gly"  
 PS 1 hgegtf-tsdlskgmeearvlifewlkng 30  
 PW 1 hgegtf-tsdlskgmeearvlifewlkng 31.

RESULT 13  
 ID W39302 standard; Peptide; 30 AA.

AC W39302;  
 DT 05-JUN-1998 (first entry)  
 H. horridum exendin 4 peptide.  
 DE Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
 KW glucagon reduction; hypoglycaemia; glucose; treatment.  
 OS Heloderma horridum.

Key Location/Qualifiers  
 Modified\_site 30  
 FT /note= "C-terminal amide"

PS Sequence 30 AA;

FT /note= "C-terminal amide"

Query Match 69.8%; Score 196; DB 29; Length 30;  
 best Local Similarity 93.3%; Pred. No. 2.02e-09;  
 Matches 28; Conservative 0; Mismatches 1; Indels 1; Gaps 1;

DB 1 hgegtf-tsdlskgmeearvlifewlkng 29

RESULT 15  
 ID W61772 standard; peptide; 28 AA.  
 AC W61772;  
 DT 29-MAR-1999 (first entry)  
 DE Exendin-4 (1-28) amide for use in treating disorders related to food,  
 insulin; obesity; type II diabetes; eating disorders; cardiac disease;  
 KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 OS Heloderma suspectum  
 PH Key  
 FT Location/Qualifiers  
 Modified\_site 28  
 FT /note= "the C-terminal is in amide form"  
 PS Sequence 30 AA;

Query Match 71.5%; Score 201; DB 29; Length 30;  
 best Local Similarity 96.7%; Pred. No. 6.96e-10;  
 Matches 29; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

DB 1 hgegtf-tsdlskgmeearvlifewlkng 29  
 ||||| ||||| ||||| ||||| ||||| ||||| |||||  
 Query Match 71.5%; Score 201; DB 29; Length 30;  
 best Local Similarity 96.7%; Pred. No. 6.96e-10;  
 Matches 29; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

PS Sequence 30 AA;

QY 1 hgegtf-tsdlskgmeearvlifewlkng 30

RESULT 14  
 ID W39309 standard; peptide; 30 AA.  
 AC W39309;  
 DT 05-JUN-1998 (first entry)  
 H. horridum exendin 4 peptide derivative #6.  
 DE Exendin-3; exendin 4; diabetes; insulin; secretion; biosynthesis;  
 KW glucagon reduction; hypoglycaemia; glucose; treatment.  
 OS Heloderma horridum.  
 PH Key  
 FT Location/Qualifiers  
 Modified\_site 30  
 FT /note= "C-terminal amide"

PS Sequence 30 AA;

FT /note= "C-terminal amide"

Query Match 69.8%; Score 196; DB 29; Length 30;  
 best Local Similarity 93.3%; Pred. No. 2.02e-09;  
 Matches 28; Conservative 0; Mismatches 1; Indels 1; Gaps 1;

DB 1 hgegtf-tsdlskgmeearvlifewlkng 29

RESULT 15  
 ID W61772 standard; peptide; 28 AA.  
 AC W61772;  
 DT 29-MAR-1999 (first entry)  
 DE Exendin-4 (1-28) amide for use in treating disorders related to food,  
 insulin; obesity; type II diabetes; eating disorders; cardiac disease;  
 KW insulin resistance syndrome; elevated plasma glucose level; agonist.  
 OS Heloderma suspectum  
 PH Key  
 FT Location/Qualifiers  
 Modified\_site 28  
 FT /note= "the C-terminal is in amide form"  
 PS Sequence 30 AA;

Query Match 69.8%; Score 196; DB 29; Length 30;  
 best Local Similarity 93.3%; Pred. No. 2.02e-09;  
 Matches 28; Conservative 0; Mismatches 1; Indels 1; Gaps 1;

DB 1 hgegtf-tsdlskgmeearvlifewlkng 29  
 ||||| ||||| ||||| ||||| ||||| ||||| |||||

Query Match 71.5%; Score 201; DB 29; Length 30;  
 best Local Similarity 96.7%; Pred. No. 6.96e-10;  
 Matches 29; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

PS Sequence 30 AA;

WPI; 98-398/96/34.

Reducing food intake by administering exendins or their  
 analogues - for treatment of e.g. obesity, type II diabetes,  
 eating disorders and insulin resistance

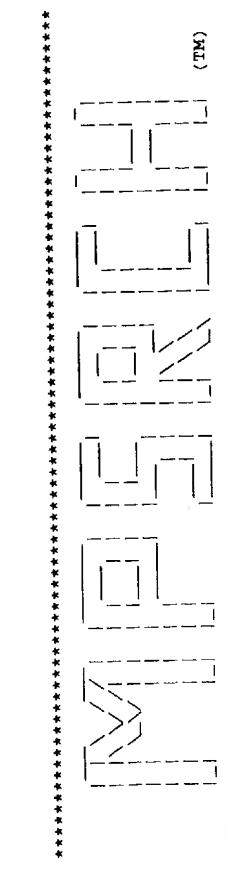
Claims 18, 26; Page 12; 214PP; English.

CC The invention relates to a new method for treating disorders that  
 CC are alleviated by reducing food intake, in particular obesity, type  
 CC II diabetes, eating disorders, insulin resistance syndrome, elevated  
 CC plasma glucose levels, or the risk of cardiac disease. The method  
 CC comprises administering an exendin or exendin agonist. The treatment  
 CC reduces appetite and lowers plasma lipid levels. It inhibits food  
 CC consumption as effectively as amylin or cholecystokinin but has a much  
 CC longer-lasting action (still effective after 6 hours in a mouse model).  
 CC The present sequence is that of exendin-4 (1-28) amide which is one of  
 CC the preferred compounds for use in the method.  
 SQ Sequence 28 AA;

Query Match 69.0%; Score 194; DB 39; Length 28;  
 Best Local Similarity 96.6%; Pred. No 3.09e-09;  
 Matches 28; Conservative 0; Mismatches 0; Indels 1; Gaps 1;

1 hgegtf-tsdlskomeeeavrfilewln 28  
 ||||| ||||||| ||||| ||||| |||||  
 QY 1 hgegtf-tsdlskomeeeavrfilewln 29

Search completed: Mon Oct 4 15:32:30 1999  
 Job time : 16 secs.



Release 3.1A John F. Collins, Biocomputing Research Unit.

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MPStoch\_PP protein - protein database search, using Smith-Waterman algorithm

Run on: Mon Oct 4 15:31:48 1999; MasPar time 6.27 Seconds  
255.433 Million cell updates/sec

Stochastic output not generated.

Title: >MOHAM-312-CLAIM83B.PEP  
(1-40) from moham312177.pep

Perfect Score: 281

Sequence: 1 hgegtfttsdlskqmeavrlfiwlgngpssgappps 40

Scoring table: PAM 150

Database: Gap 11

Searched: 122810 seqs, 40068593 residues

Post-processing: Minimum Match 0%  
Listing First 45 summariesStatistics: Mean 35.094; Variance 64.811; scale 0.541  
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

## SUMMARIES

Result No.	Query	Match	Length	DB ID	Description	Pred. No.
1	263	91.6	39	1	RWGH4G	1.82e-34
2	256	91.1	39	1	RWGH3Z	4.97e-33
3	115	41.3	31	2	S44472	3.26e-06
4	116	41.3	101	1	GCFGB	3.26e-06
5	114	40.6	63	1	GCIDC	7.09e-06
6	111	39.5	30	2	S44473	2.25e-05
7	111	39.5	31	2	S44471	2.25e-05
8	110	39.1	30	2	B61125	3.30e-05
9	110	39.1	30	2	C61125	3.30e-05
10	109	38.8	66	2	I51093	4.82e-05
11	109	38.8	178	2	I51057	4.82e-05
12	109	38.8	178	2	I51058	4.82e-05
13	108	38.4	72	1	GCGGA	7.05e-05
14	107	38.1	122	1	GCAF2	1.03e-04
15	106	37.7	60	1	GCONC	1.50e-04
16	104	37.0	29	1	GCDP	3.17e-04
17	104	37.0	158	1	GCPG	3.17e-04
18	104	37.0	180	2	A57294	3.17e-04
19	104	37.0	180	1	GCHY	3.17e-04
20	104	37.0	180	1	GRTRD1	3.17e-04
21	104	37.0	180	1	GCBO	3.17e-04
22	104	37.0	180	1	GCGP	3.17e-04
23	104	37.0	180	1	GCHU	3.17e-04

## ALIGNMENTS

RESULT	ENTRY	TITLE	ORGANISM	DATE
1	RWGH4G	#type complete exendin-4 - Gila monster		
		*#formal_name Heloderma suspectum #common_name Gila monster		
		31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change		
		21-Nov-1997		
		A42486		
		REFERENCE Eng, J.; Kleinman, W.A.; Singh, L.; Raufman, J.P.		
		#authors		
		J. Biol. Chem. (1992) 267:7402-7405		
		#journal		
		#title		
		Isolation and characterization of exendin-4, an exendin-3 analogue, from Heloderma suspectum venom. Further evidence for an exendin receptor on dispersed acini from guinea pig pancreas.		
		#cross-references M012:92218391		
		#accession A42486		
		##molecule_type protein		
		#residues 1-39 #label ENG		
		COMMENT Exendin-4 does not stimulate amylase secretion by pancreatic cells.		
		CLASSIFICATION #superfamily glucagon		
		KEYWORDS amidated carboxyl end; duplication; venom		
		FEATURE #modified site amidated carboxyl end (Ser) #status		
		39 #length 39 #molecular-weight 4188 #checksum 9570		
		SUMMARY experimental		
		Query Match 93.6%; Score 263; DB 1; Length 39;		
		Best Local Similarity 97.5%; Pred. 1.82e-34;		
		Matches 39; Conservative 0; Mismatches 0; Indels 1; Gaps 1;		
		Db 1 HGEGTF-TSDLSKMEEAVRLFIEWLNGGSSGAPPS 39		
		Qy 1 hgegtfttsdlskqmeavrlfiwlgngpssgappps 40		
		RESULT 2		
		ENTRY RWGH3Z #type complete		
		Exendin-3 - Mexican beaded lizard		
		#formal_name Heloderma horridum #common_name Mexican beaded lizard		
		31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change		
		21-Nov-1997		
		A42486		
		REFERENCE Eng, J.; Andrews, P.C.; Kleinman, W.A.; Singh, L.; Raufman,		
		#authors		



Tue Oct 5 09:37:45 1999

MOHAM-312-CLAIM83B.PEP.rpr

Page 3

ENTRY  
TITLE S44473 #type complete  
glucagon-like peptide - North American paddlefish (Polyodon  
spathula)  
ORGANISM #formal\_name Polyodon spathula  
DATE 18-Sep-1997 #sequence\_revision 18-Sep-1997 #text\_change  
20-Mar-1998  
ACCESSIONS S44473  
#authors Nguyen, T.M.; Mommesen, T.P.; Mims, S.M.; Conlon, J.M.  
#journal Biochem. J. (1994) 300:339-345  
#title Characterization of insulin and proglucagon-derived peptides  
from a phylogenetically ancient fish, the paddlefish  
(Polyodon spathula).  
#accession S44473  
##molecule\_type protein  
#residues 1-30 #label NGU  
CLASSIFICATION #superfamily glucagon  
KEYWORDS duplication; hormone; pancreas  
FEATURE 1-30  
SUMMARY Query Match Score 39.5%; Pred. No. 2.25e-05;  
Best Local Similarity 53.3%; Indels 1; Gaps 1;  
Matches 16; Conservative 7; Mismatches 6;  
#product glucagon-like peptide #status predicted #label  
MAT #length 30 #molecular-weight 3359 #checksum 5186  
Db 1 HADGTY-TSDVSSYLQDOAAKFEVSMWKTG 29  
Qy 1 hgegtftsdlskqmeeaavrlfiwlkg 30  
RESULT 7  
ENTRY S44471 #type complete  
glucagon G1 - North American paddlefish (Polyodon spathula)  
TITLE #formal\_name Polyodon spathula  
ORGANISM #text\_change  
DATE 18-Sep-1997 #sequence\_revision 18-Sep-1997 #text\_change  
20-Mar-1998  
ACCESSIONS S44471  
#authors Nguyen, T.M.; Mommesen, T.P.; Mims, S.M.; Conlon, J.M.  
#journal Biochem. J. (1994) 300:339-345  
#title Characterization of insulin and proglucagon-derived peptides  
from a phylogenetically ancient fish, the paddlefish  
(Polyodon spathula).  
#accession S44471  
##molecule\_type protein  
#residues 1-31 #label NGU  
##experimental\_source pancreas  
CLASSIFICATION #superfamily glucagon  
#carbohydrate metabolism; duplication; hormone; pancreas  
KEYWORDS #product glucagon G1 #status predicted #label MAT  
FEATURE 1-31  
SUMMARY #length 31 #molecular-weight 3751 #checksum 7808  
Query Match Score 39.5%; Pred. No. 2.25e-05;  
Best Local Similarity 53.3%; Indels 1; Gaps 1;  
Matches 16; Conservative 7; Mismatches 6;  
#product glucagon G1 #status predicted #label MAT  
#length 31 #molecular-weight 3751 #checksum 7808  
Db 1 HSQGMF-TNDYSKYLEKRAKERFLWLKG 29  
Qy 1 hgegtftsdlskqmeeaavrlfiwlkg 30  
RESULT 8  
ENTRY S61125 #type complete  
glucagon-like Peptide - American eel  
#formal\_name Anguilla rostrata #common\_name American eel  
#text\_change  
10-Mar-1994 #sequence\_revision 10-Mar-1994 #text\_change  
21-Nov-1997  
ORGANISM B61125  
ACCESSIONS A61125  
#authors Conlon, J.M.; Andrews, P.C.; Thim, L.; Moon, T.W.  
#title

#cross-references MUID:9134068  
#accession B61125  
##molecule\_type protein  
#residues 1-30 #label CON  
CLASSIFICATION #superfamily glucagon  
KEYWORDS amidated carboxyl end; duplication  
FEATURE 1-30  
SUMMARY #length 30 #molecular-weight 3376 #checksum 6092  
Query Match Score 39.1%; Pred. No. 3.30e-05;  
Best Local Similarity 46.7%; Indels 1; Gaps 1;  
Matches 14; Conservative 9; Mismatches 6;  
#modified\_site amidated carboxyl end (Arg) #status  
predicted  
Db 1 HAGSTY-TSDVSSYLQDOAAKFEVSMWKTG 29  
Qy 1 hgegtftsdlskqmeeaavrlfiwlkg 30  
RESULT 9  
ENTRY C61125 #type complete  
glucagon-like peptide - European eel  
#formal\_name Anguilla anguilla #common\_name European eel  
#text\_change 10-Mar-1994 #sequence\_revision 10-Mar-1994 #text\_change  
21-Nov-1997  
ORGANISM C61125  
ACCESSIONS A61125  
REFERENCE CONLON, J.M.; ANDREWS, P.C.; THIM, L.; MOON, T.W.  
#authors CONLON, J.M.; ANDREWS, P.C.; THIM, L.; MOON, T.W.  
#journal GEN. COMP. ENDOCRINOLOGY  
#title #cross-references MUID:9134068  
#accession C61125  
##molecule\_type Protein  
#residues 1-30 #label CON  
CLASSIFICATION #superfamily glucagon  
KEYWORDS amidated carboxyl end; duplication  
FEATURE 1-30  
SUMMARY #length 30 #molecular-weight 3376 #checksum 6092  
Query Match Score 39.1%; Pred. No. 3.30e-05;  
Best Local Similarity 46.7%; Indels 1; Gaps 1;  
Matches 14; Conservative 9; Mismatches 6;  
#modified\_site amidated carboxyl end (Arg) #status  
predicted  
Db 1 HAGSTY-TSDVSSYLQDOAAKFEVSMWKTG 29  
Qy 1 hgegtftsdlskqmeeaavrlfiwlkg 30  
RESULT 10  
ENTRY I51093 #type fragment  
glucagon - Chinook salmon (fragment)  
#formal\_name Oncorhynchus tshawytscha #common\_name chinook  
#text\_change 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
21-Nov-1997  
ORGANISM I51093  
ACCESSIONS A55895  
#authors IRWIN, D.M.; WONG, J.  
#journal MOL. ENDOCRINOL.  
#title TROUT AND CHICKEN PROGLUCAGON: ALTERNATIVE SPLICING GENERATES

#cross-references MUID:95295739  
#accession 151093 preliminary; translated from GB/EMBL/DDBJ  
##molecule\_type mRNA  
##residues 1-66 #label IRW  
##cross-references EMBL:U19920; NID:9736366; PID:9736367  
CLASSIFICATION #superfamily glucagon  
KEYWORDS duplication  
SUMMARY #length 66 \*checksum 1440

Query Match 38.8% Score 109; DB 2; Length 66;  
Best Local Similarity 43.3%; Pred. No. 4.82e-05;  
Matches 13; Conservative 11; Mismatches 5; Indels 1; Gaps 1;

33 HADGTY-TSDVSTYLYQDQAAKDEVSWLKSG 61  
|:||:||:||:||:||:||:||:||:||:||:||:  
1 hgegtfitsdskqmcceavrifewlkng 30

RESULT 11 151057 #type complete  
ENTRY trout II Precursor - rainbow trout  
TITLE Oncorhynchus mykiss #common\_name rainbow trout  
ORGANISM  
DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
21-Nov-1997

ACCESSIONS A55895  
#authors Irwin, D.M.; Wong, J.  
#journal McL. Endocrinol.  
#title Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.

#cross-references MUID:95295739  
#accession 151057 preliminary; translated from GB/EMBL/DDBJ  
##molecule\_type mRNA  
##residues 1-178 #label IRW  
##cross-references EMBL:U19911; NID:9736362; PID:9736363  
#accession 151039 preliminary; translated from GB/EMBL/DDBJ  
##molecule\_type mRNA  
##residues 113-144 #label IR2  
##cross-references EMBL:U19916; NID:9736369; PID:9736372  
#accession 151038 preliminary; translated from GB/EMBL/DDBJ  
##molecule\_type DNA  
##residues 113-123 #label IR3  
##cross-references EMBL:U19915; NID:9736368; PID:9736371  
GENETICS 123/2  
#intron  
KEYWORDS

Query Match 38.8% Score 109; DB 2; Length 178;  
Best Local Similarity 43.3%; Pred. No. 4.82e-05;  
Matches 13; Conservative 11; Mismatches 5; Indels 1; Gaps 1;

Db 90 HADGTY-TSDVSTYLYQDQAAKDEVSWLKSG 118  
QY 1 hgegtfitsdskqmcceavrifewlkng 30

RESULT 13 GCXGA #type fragment  
ENTRY glucaiton precursor - alligator gar (fragment)  
TITLE oxyntomodulin  
ALTERNATE\_NAMES oxyntomodulin; glucagon-like peptide  
CONTAINS 1  
ORGANISM #formal\_name Lepisosteus spatula #common\_name alligator gar  
DATE 31-Mar-1993 #sequence\_revision 31-Mar-1993 #text\_change  
ACCESSIONS S06339; S06871  
REFERENCE  
#authors Pollock, H.G.; Kimmel, J.R.; Ebner, K.E.; Hamilton, J.W.;  
Rouse, J.B.; Lance, V.; Rawitch, A.B.  
#journal Gen. Comp. Endocrinol.  
#title Isolation of alligator gar (*Lepisosteus spatula*) glucagon,  
oxyntomodulin and glucagon-like peptide: amino acid  
sequences of oxyntomodulin and glucagon-like peptide.  
#cross-references MUID:88196798  
#accession S06339  
##molecule-type protein  
##residues 1-36 #label POL  
#accession S06871  
##molecule-type protein  
##residues 39-72 #label P02  
COMMENT X's at positions 37-38 represent a pair of basic amino acids  
forming a cleavage site.

Db 90 HADGTY-TSDVSTYLYQDQAAKDEVSWLKSG 118  
QY 1 hgegtfitsdskqmcceavrifewlkng 30

RESULT 12 I51058 #type complete  
ENTRY glucagon I precursor - rainbow trout  
TITLE #formal\_name Oncorhynchus mykiss #common\_name rainbow trout  
ORGANISM  
DATE 13-Sep-1996 #sequence\_revision 13-Sep-1996 #text\_change  
21-Nov-1997  
ACCESSIONS A55895; I51299; I51056; I51037; I51300  
REFERENCE  
#authors Irwin, D.M.; Wong, J.  
McL. Endocrinol.  
#journal







RESULT	5	GLDMANGAN	STANDARD;	PRT;	30 AA.
RX	P41521;				
AC	01-NOV-1995 (REL. 32, CREATED)				
AC	01-NOV-1995 (REL. 32, LAST SEQUENCE UPDATE)				
DI	01-NOV-1995 (REL. 32, LAST ANNOTATION UPDATE)				
DP	GLUCAGON-LIKE PEPTIDE (GLP).				
DP	ANGUILLA ANGUILA (EUROPEAN FRESHWATER EEL), AND				
OS	ANGUILLA ROSTRATA (AMERICAN EEL).				
OS	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII;				
OC	TELEOSTEI; ANGIULIFORMES; ANGUILLIDAE; ANGUILLA.				
OC	[11]RN				
RN	SEQUENCE.				
RP	RP TISSUE= PANCREAS;				
RC	MEDLINE; 91340068.				
RC	CONDOLINE J.M., ANDREWS P.C., THIM L., MOON T.W.;				
RC	"The primary structure of glucagon-like peptide but not insulin has been conserved between the American eel, <i>Anguilla rostrata</i> and the European eel, <i>Anguilla anguilla</i> .";				
RT	GEN. COMP. ENDOCRINOL. 82:23-32(1991).				
RT	-1- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.				
RL	[11]C				
PIR:	B61125; B61125.				
PIR:	C61125; C61125.				
DR	PROSTE; PS00260; GLUCAGON; 1.				
DR	PFAM; PF00123; hormone2; 1.				
DR	HSSP; P01274; 1GCN.				
KW	GLUCAGON FAMILY; AMIDATION.				
ET	MOD. RES 30 30 AMIDATION.				
SQ	SEQUENCE 30 AA: 3376 MW: 27EBG37D CRC32;				
Query Match	39 1%; Score 110; DB 1; Length 30;				
Best Local Similarity	46 7%; Pred. No. 4.29e-06;				
Matches	14; Conservative 9; Mismatches 6; Indels 1; Gaps 1;				
Db	1 HAEHG-TSDSYSLQDQAKEFVERLKG 29				
Qy	1 hgegtfidskqmeearvlfiwking 30				
RESULT	6	GLUC LEPPSP	STANDARD;	PRT;	78 AA.
RX	AC P09566;				
AC	01-MAR-1989 (REL. 10, CREATED)				
DT	01-NOV-1990 (REL. 16, LAST SEQUENCE UPDATE)				
DT	01-FEB-1994 (REL. 28, LAST ANNOTATION UPDATE)				
DI	GLUCAGON PRECURSOR (FRAGMENT)				
DE	LEPISOSTEUS SPATULA (ALLIGATOR GAR) (ATRACTOSTEUS SPATULA).				
OS	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII;				
OC	SEMIOTICFORMES; LEPISOSTEIDAE; LEPISOSTEUS.				
OC	[11]				
RL	SEQUENCE OF 1-36 AND 45-78.				
RN	TISSUE= PANCRAS;				
RN	MEDLINE; 88136798.				
RP	PRELIMINARY SEQUENCE OF 1-29.				
RC	RP TISSUE= PANCRAS;				
RC	RX MEDLINE: 88030394.				
RA	RA POLLOCK H.G., KIMMEL J.R., EBNER K.E., HAMILTON J.W., ROUSE J.B.,				
RA	RA DANCE V., RAWITCH A.B.;				
RA	"Isolation and structures of alligator gar ( <i>Lepisosteus spatula</i> ) glucagon, insulin and pancreatic polypeptide."				
RT	Oxyntomodulin, and glucagon-like peptide: amino acid sequences of oxyntomodulin and glucagon-like peptide."				
RT	GEN. COMP. ENDOCRINOL. 69:133-140(1998).				
RL	[12]				
RN	THE BLOOD SUGAR LEVEL.				
RP	INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS				
RC	IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.				
RC	[11]				

U1 NOV-1986 (REL. 03, LAST SEQUENCE UPDATE)  
 DT 15-DEC-1998 (REL. 37, LAST ANNOTATION UPDATE)

DE GLUCAGON II PRECURSOR.  
 OS LOPHIUS AMERICANA (AMERICAN GOOSEFISH) (ANGLERFISH).  
 OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 OC TELEOSTEI; EUTELEOSTEI; PARACANTHOPTERYGII; LOPHIIFORMES; LOPHIIDAE;  
 OC LOPHIUS.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RX MEDLINE; 83135785.  
 RA LUND P.K.; GOODMAN R.H.; MONTMINY M.R.; DEE P.C.; HABENER J.F.;  
 RT "Anglerfish islet pre-proglucagon II. Nucleotide and corresponding  
 amino acid sequence of the cDNA."  
 J. BIOL. CHEM. 258:3280-3284(1983).

P2 PROCESSING.  
 MEDLINE; 86286913.  
 NOE B.D.; ANDREWS P.C.;  
 RT "Specific glucagon-related peptides isolated from anglerfish islets  
 are metabolic cleavage products of (pre)proglucagon-II.";  
 RT PEPTIDES 7:331-339(1986).  
 CC -I- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOCEN AND LIPIDS, AND RAISES  
 THE BLOOD SUGAR LEVEL.  
 CC -I- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
 IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.

CC -I- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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 or send an email to license@isb-sib.ch).

CC DR V00632; 364022; -.  
 EMBL: J00933; G213353; -.  
 DR PIR: A05150; GCAF2; -.  
 DR PROSITE: PS00260; GLUCAGON; 2.  
 DR PFFAM; PF00123; hormone2; 2.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.

FT SIGNAL 1 21  
 PEPTIDE 2 2  
 PEPTIDE 5 2  
 PEPTIDE 8 9  
 PEPTIDE 122 AA; 119 GLUCAGON-LIKE PEPTIDE II.  
 SEQUENCE DFE63061 CRC32;

Query Match Score 38.1%; DB 1; Length 122;  
 Best Local Similarity 43.3%; Pred. No. 1.49e-05; Gaps 1;  
 Matches 13; Conservative 10; Mismatches 6; Indels 1; Gaps 1;

Db 89 HADGTY-TSDYSSVYLQDQAQAKDFYSWLKG 117  
 QY 1 hgsgtfitsdlskqmeearvifewlkng 30

RESULT 9  
 ID GLUC\_ONCKI STANDARD;  
 AC P07449;  
 DT 01-APR-1988 (REL. 07, CREATED)  
 DT 01-APR-1988 (REL. 07, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1990 (REL. 16, LAST ANNOTATION UPDATE)

DE GLUCAGON PRECURSOR (FRAGMENT).  
 OS ONCORHYNCHUS KISUTCH (COHO SALMON).  
 OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 OC TELEOSTEI; EUTELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES;  
 OC SALMONIDAE; ONCORHYNCHUS.  
 RN SEQUENCE; 86234328.  
 RX MEDLINE;  
 RA PLISETSKAYA E.; POLLACK H.G.; ROUSE J.B.; HAMILTON J.W.; KIMMEL J.R.;  
 RA GORBMAN A.;



Eukaryota; Metazoa; Chordata; Vertebrata; Mammalia; Eutheria;  
 Primates; Catarrhini; Hominidae; Homo.  
 [1] Sequence from N.A.  
 MEDLINE: 88330860.  
 DRUCKER D.J., ASA S.;  
 "Glucagon gene expression in vertebrate brain.";  
 J. BIOL. CHEM. 263:13475-13478(1988).  
 [2] Sequence from N.A.  
 MEDLINE: 86250053.  
 WHITE J.W., SAUNDERS G.F.;  
 "Structure of the human glucagon gene.";  
 NUCLEIC ACIDS RES. 14:4719-4730(1986).  
 [3] Sequence from N.A.  
 TISSUE=LIVER;  
 MEDLINE: 83271477.  
 BELL G.I., SANCHEZ-PESCADOR R., LAYBOURN P.J., NATARIAN R.C.;  
 "Exon duplication and divergence in the human preproglucagon gene.";  
 NATURE 304:368-371(1983).  
 [4] Sequence of 53-91.  
 THOMSEN J., KRISTJANSEN K., BRUNFIELDT K., SUNDBY F.;  
 "The amino acid sequence of human glucagon.";  
 FEBS LEFT. 21:315-319(1972).  
 [5] Sequence of 98-127.  
 MEDLINE: 9327238.  
 ORSKOV C., BERSANT M., JOHNSEN A.H., HØGSTRUP P., HOLST J.J.;  
 "Complete sequences of glucagon-like peptide-1 from human and pig  
 small intestine.";  
 J. BIOL. CHEM. 264:12826-12829(1989).  
 [6] X-ray crystallography (3.0 Ångströms) of 53-81.  
 MEDLINE: 98334683.  
 STUMLIN N.S., LIN Y., BURLEY S.K., KRISTJANSEN K.J.L., AHN J.M.,  
 AZZEH B.Y., TRIVEDI D., HRUSY V.J.;  
 "Structure-function studies on positions 17, 18, and 21 replacement  
 analogues of glucagon: the importance of charged residues and salt  
 bridges in glucagon biological activity.";  
 J. MED. CHEM. 41:2693-2700(1998).  
 -!- FUNCTION: Promotes hydrolysis of glycogen and lipids, and raises  
 the blood sugar level.  
 -!- INDUCTION: Produced in the A cells of the islets of Langerhans  
 in response to a drop in blood sugar concentration.  
 -!- SIMILARITY: Belongs to the glucagon family.  
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 or send an email to license@isb-sib.ch).  
 CC  
 DR EMBL: J04040; G13210; -.  
 DR EMBL: X03991; G76291; -.  
 DR EMBL: V01515; G31778; -.  
 DR EMBL: V01515; E28349; ALT\_SEQ.  
 DR PIR: S23309; S23309.  
 DR MIM: 138030; -.  
 DR PROSITE: PS00260; GLUCAGON; 4.  
 DR PFAM: PF00123; hormone2; 3.  
 DR PDB: 1BHO; 1B-Nov-98.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL;  
 3D-STRUCTURE.  
 FT SIGNAL 1 20 GRPP (GLICENTINE RELATED POLYPEPTIDE).  
 KW GLUCAGON-LIKE PEPTIDE 1.  
 FT PEPTIDE 21 50 GRPP (GLICENTINE RELATED POLYPEPTIDE).  
 FT PEPTIDE 53 81 GLUCAGON-LIKE PEPTIDE 1.  
 FT PEPTIDE 53 81 GLUCAGON-LIKE PEPTIDE 2.  
 FT PEPTIDE 146 178 GLUCAGON-LIKE PEPTIDE 2.  
 FT CONFLICT 82 82 K -> N (IN REF. 3).  
 SQ SEQUENCE 180 AA; 20909 MW; DEE43985 CRC32; -.  
 Query Match 37.0%; Score 104; DB 1; Length 180;  
 Best Local Similarity 53.3%; Pred. No. 5.13e-05;  
 Matches 16; Conservative 6; Mismatches 7; Indels 1; Gaps 1;  
 Qy 1 Iagegttsdlskqmeeeavrlfiewlkng 30

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RESULT 14  
 ID GLUCAVPO STANDARD PRT 180 AA.  
 AC P05110;  
 DT 13-AUG-1987 (REL. 05, CREATED)  
 DT 13-AUG-1987 (REL. 05, LAST SEQUENCE UPDATE)  
 DT 01-FEB-1996 (REL. 33, LAST ANNOTATION UPDATE)  
 DE GLUCAGON PRECURSOR.  
 GN CAVIA PORCELLUS (GUINEA PIG);  
 EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;  
 OC RODENTIA; HYSTRICOGNATHI; CAVIDAE; CAVIA.  
 RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE; 8648118.  
 RA SEINO S., WELSH M., BELL G.I., CHAN S.J., STEINER D.F.;  
 "Mutations in the guinea pig preproglucagon gene are restricted to a  
 specific portion of the prohormone sequence.";  
 RL FEBS LEFT. 203:25-30(1986).  
 RN [2]  
 RP SEQUENCE OF 53-81.  
 RX MEDLINE; 86165412.  
 RA HUANG C.G., ENG J., PAN Y.-C.E., HUMES J.D., YALOW R.S.;  
 "Guinea pig glucagon differs from other mammalian glucagons.";  
 RL DIABETES 33:508-512(1986).  
 RN [3]  
 RP PARTIAL SEQUENCE OF 53-89.  
 RX MEDLINE; 86117849.  
 RA CONLON J.M., HANSEN H.F., SCHWARTZ T.W.;  
 "Primary structure of glucagon and a partial sequence of  
 oxyntomodulin (glucagon-37) from the guinea pig.";  
 RL REGUL. PEPT. 11:309-320(1995).  
 CC -!- FUNCTION: Promotes hydrolysis of glycogen and lipids, and raises  
 the blood sugar level.  
 CC -!- INDUCTION: Produced in the A cells of the islets of Langerhans  
 in response to a drop in blood sugar concentration.  
 CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.  
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 or send an email to license@isb-sib.ch).  
 CC  
 DR EMBL: D00014; D1000436; -.  
 DR PIR; A4856; GCGP.  
 DR PROSITE: PS00260; GLUCAGON; 4.  
 DR HSSP; P01274; 1GEN.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL.  
 FT SIGNAL 1 20 GRPP (GLICENTINE RELATED POLYPEPTIDE).  
 FT PEPTIDE 21 50 GLUCAGON.  
 FT PEPTIDE 53 81 GLUCAGON-37 (OXYNTOMODULIN).  
 FT PEPTIDE 92 128 GLUCAGON-LIKE PEPTIDE 1.  
 FT PEPTIDE 146 146 20972 MW; 9B724097 CRC32; -.  
 SQ SEQUENCE 180 AA; 20972 MW; 9B724097 CRC32; -.

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Query Match 37.0%; Score 104; DB 1; Length 180;

Best Local Similarity 53.3%; Pred. No. 5.13e-05;  
 Matches 16; Conservative 6; Mismatches 7; Indels 1; Gaps 1;  
 Db 98 HAE~~GTF-TSDVSSYLEGQAAKEFIAWLYKG~~ 126  
 Qy 1 hgegtitstdkskmeeearfliewlkng 30

RESULT 15 STANDARD;  
 ID GLUC\_OCTDE PRT; 180 AA.  
 AC P22890;  
 DT 01-AUG-1991 (REL. 19, CREATED)  
 DT 01-AUG-1991 (REL. 19, LAST SEQUENCE UPDATE)  
 DT 01-JUL-1993 (REL. 26, LAST ANNOTATION UPDATE)  
 DE GLUCAGON PRECURSOR  
 OS OCTODON DEGUS (DEGU).  
 OC EUCARYOTA; METAZOA; CHORDATA; VERTEBRATA; MAMMALIA; EUTHERIA;  
 OC RODENTIA; HYSTRICOGNATHI; OCTODONTIDAE; OCTODON.  
 RN [1]  
 SEQUENCE FROM N.A.  
 RX MEDLINE; 91155952.  
 RA NISHI M.; STEINER D.F.;  
 "Cloning of complementary DNAs encoding islet amyloid polypeptide,  
 insulin, and glucagon precursors from a New World rodent, the degu,  
 Octodon degus.";  
 RL MOL-ENDOCRINOL. 4:1192-1198 (1990).  
 CC -!- FUNCTION: PROMOTES HYDROLYSIS OF GLYCOGEN AND LIPIDS, AND RAISES  
 THE BLOOD SUGAR LEVEL.  
 CC -!- INDUCTION: PRODUCED IN THE A CELLS OF THE ISLETS OF LANGERHANS  
 IN RESPONSE TO A DROP IN BLOOD SUGAR CONCENTRATION.  
 CC -!- SIMILARITY: BELONGS TO THE GLUCAGON FAMILY.

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 or send an email to license@isb-sib.ch).

CC DR M57688; G202468; -.  
 DR PIR: C36118; GCSTDU.  
 DR PROSITE; PS00260; GLUCAGON; 4.  
 DR PF00123; hormone2; 3.  
 DR HSSP; P01274; IGEN.  
 KW GLUCAGON FAMILY; HORMONE; CLEAVAGE ON PAIR OF BASIC RESIDUES; SIGNAL;  
 KW AMIDATION.  
 FT SIGNAL 1 20 GRPP (GLYCINE RELATED POLYPEPTIDE).  
 FT PEPTIDE 21 50 GLUCAGON  
 FT PEPTIDE 53 81 GLUCAGON-LIKE PEPTIDE 1.  
 FT PEPTIDE 92 127 GLUCAGON-LIKE PEPTIDE 2.  
 FT PEPTIDE 146 178 AMIDATION (G-128 PROVIDE AMIDE GROUP).  
 FT MOD\_RES 127 127 4A1F5CE3 CRC32;  
 SPQUENCE 180 AA; 21165 MW;

Query Match 37.0%; Score 104; DB 1; Length 180;  
 Best Local Similarity 53.3%; Pred. No. 5.13e-05;  
 Matches 16; Conservative 6; Mismatches 7; Indels 1; Gaps 1;  
 Db 98 HAE~~GTF-TSDVSSYLEGQAAKEFIAWLYKG~~ 126  
 Qy 1 hgegtitstdkskmeeearfliewlkng 30



RX MEDLINE; 97368292.  
 RA IRWIN D.M.; SAIKUNARAJAH M.; WEN Y.; BRUBAKER P.L.; PEDERSON R.A.;  
 RA WHEELER M.B.;  
 RT "The Xenopus proglucagon gene encodes novel GLP-1-like peptides with insulinotropic properties.";  
 RT PROC NATL ACAD SCI U.S.A. 94:7915-7920(1997).  
 RT EMBL; AF04433; G2305018; -.  
 DR PROSITE; PS00260; GLUCAGON; 3.  
 DR PFAM; PF00123; hormone2; 4.  
 SQ SEQUENCE: 219 AA; 25271 MW; 45C42A88 CRC32;  
 Query Match Score 50.5%; Pred. No. 1 64e-11; Length 219;  
 Best Local Similarity 54.5%; Pred. No. 1 64e-11; Indels 1; Gaps 1;  
 Matches 18; Conservative 9; Mismatches 5;  
 1 hgegtftsdkskqmeeeavrifewlkng 33  
 RESULT 3 PRELIMINARY; PRT; 66 AA.  
 ID Q91188; AC Q91188;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED);  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE);  
 DE GLUCAGON (FRAGMENT).  
 OS ONCORHINCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).  
 OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 OC ONCORHINCHUS.  
 RN 1  
 RP SEQUENCE FROM N.A.  
 RC TISSUE-PANCREAS;  
 RX MEDLINE; 95295739.  
 RA IRWIN D.M.; WONG J.;  
 RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";  
 DE GLUCAGON (FRAGMENT).  
 OS ENDOCRINOL; 9:267-277(1995).  
 RL EMBL; U19913; G736361; -.  
 DR PFAM; PF00123; hormone2; 2.  
 DR NON-TER 1  
 FT SEQUENCE 66 AA; 7680 MW; 62C576E2 CRC32;  
 SQ SEQUENCE 38.8%; Pred. No. 1 1.88e-05; Length 66;  
 Best Local Similarity 43.3%; Pred. No. 1 1.88e-05; Indels 1; Gaps 1;  
 Matches 13; Conservative 11; Mismatches 5;  
 1 hgegtftsdkskqmeeeavrifewlkng 30  
 RESULT 4 PRELIMINARY; PRT; 72 AA.  
 ID Q91409; AC Q91409;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED);  
 DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE);  
 DE PROGLUCAGON (FRAGMENT).  
 OS ONCORHINCHUS TSCHAWYTSCHA (CHINOOK SALMON) (KING SALMON).  
 OC EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; NEOPTERYGII;  
 OC TELOSTEI; EUKARYOTA; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE;  
 OC ONCORHINCHUS.  
 RN 1  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE; 95295739.  
 RA IRWIN D.M.; WONG J.;  
 RT "Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2.";  
 RL EMBL; U19913; G736365; -.  
 DR PROSITE; PS00260; GLUCAGON; 3.  
 DR PFAM; PF00123; hormone2; 3.  
 SQ SEQUENCE 178 AA; 2054 MW; 205F963 CRC32;  
 Query Match Score 38.8%; Pred. No. 1 1.86e-05;  
 Best Local Similarity 43.3%;

Matches	13;	Conservative	11;	Mismatches	5;	Indels	1;	Gaps	1;
Db	90	HADGTY-TSDVSTYLQDQAQKDFYSWLGSG	118						
Qy	1	hgegtiftsdlskgmeeavrifiewlkng	30						
RESULT	7	PRELIMINARY;		PRT;	178	AA.			
ID	Q91189;	092158;							
AC	Q91189;	092158;							
DT	01-NOV-1996	(TREMBLREL. 01; CREATED)							
DT	01-NOV-1996	(TREMBLREL. 01; LAST SEQUENCE UPDATE)							
DE	01-NOV-1998	(TREMBLREL. 08; LAST ANNOTATION UPDATE)							
OS	ONCORHYNCHUS MYKISS (RAINBOW TROUT) (SALMO GAIRDNERI).								
OC	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ACTINOPTERYGII; TELEOSTEI; PROTACANTHOPTERYGII; SALMONIFORMES; SALMONIDAE; ONCORHYNCHUS.								
CL	[1]								
RN	SEQUENCE FROM N.A. TISSUE=INTESTINE, DISTAL PORTION; MEDLINE; 95295739.								
RC	IRWIN D.M., WONG J.J.								
RT	"Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2."								
MOL	ENDOCRINOL. 9:267-277(1995).								
KL									
DR	U19916; G736363;								
EMBL									
DR	U19916; G736372;								
EMBL									
DR	U19915; G736372;								
EMBL									
DR	PF00123; hormone2; 3;								
SQ	SEQUENCE 178 AA; 19998 MW; A4299C13 CRC32;								
Query Match	38.8%	Score 109; DB 13; Length 178;							
Best Local Similarity	43.3%	Pred. No. 1.86e-05;							
Matches	13;	Conservative	11;	Mismatches	5;	Indels	1;	Gaps	1;
Db	90	HADGTY-TSDVSTYLQDQAQKDFYSWLGSG	118						
Qy	1	hgegtiftsdlskgmeeavrifiewlkng	30						
RESULT	8	PRELIMINARY;		PRT;	206	AA.			
ID	Q91410;								
AC	Q91410;								
DT	01-NOV-1996	(TREMBLREL. 01; CREATED)							
DT	01-NOV-1996	(TREMBLREL. 01; LAST SEQUENCE UPDATE)							
DE	01-NOV-1998	(TREMBLREL. 08; LAST ANNOTATION UPDATE)							
OS	PROGLUCAGON.								
OC	GALLUS GALLUS (CHICKEN).								
RN	EUKARYOTA; METAZOA; CHORDATA; VERTEBRATA; ARCHOSAURIA; AVES; NEognathae; GALLIFORMES; PHASIANIDAE; PHASIANINAe; GALLUS.								
CL	[1]								
RN	SEQUENCE FROM N.A.								
RC	MEDLINE; 95295739.								
RT	IRWIN D.M., WONG J.J.								
RT	"Trout and chicken proglucagon: alternative splicing generates mRNA transcripts encoding glucagon-like peptide 2."								
MOL	ENDOCRINOL. 9:267-277(1995).								
DR	PS00260; GLUCAGON;								
DR	PF00123; hormone2; 3;								
SQ	SEQUENCE 206 AA; 23875 MW; 8EC91118 CRC32;								
Query Match	36.7%	Score 103; DB 13; Length 206;							
Best Local Similarity	50.0%	Pred. No. 2.02e-04;							
Matches	15;	Conservative	7;	Mismatches	7;	Indels	1;	Gaps	1;
Db	118	HAEGT-TSDTISYLEGGQAAREFIAMLVNG	146						
Qy	1	hgegtiftsdlskgmeeavrifiewlkng	30						

RL SUBMITTED (DEC-1997) TO EMBL/GENBANK/DDJB DATA BANKS.  
 RN [2]

SEQUENCE FROM N.A.  
 RC STRAIN-RC-HL;

RA SUBMITTED (JAN-1998) TO EMBL/GENBANK/DDJB DATA BANKS.  
 RL EMBL; AB009663; D124994; -;

DR EMBL; AB009662; D124985; -;  
 SQ SEQUENCE 2127 AA; 24247 MW; 847321FB CRC32;

Query Match 33.8%; Score 95; DB 14; Length 2127;  
 Best Local Similarity 47.6%; Pred. No. 4.41e-03;

Matches 10; Conservative 6; Mismatches 5; Indels 0; Gaps 0;

Db 37 NLNSPLIEDPVRMLENIKTG 57  
 :|: :|:|:|:|:|:|:  
 10 dskqmeearvrliewlkng 30

RESULT 12  
 ID 085563 PRELIMINARY; PRT; 379 AA.

AC 085563;  
 DT 01-NOV-1998 (TREMBLREL. 08, CREATED)

DT 01-NOV-1998 (TREMBLREL. 08, LAST SEQUENCE UPDATE)  
 DE HYPOTHETICAL 42.3 KD PROTEIN.

CS SPHINGOMONAS AROMATICIVORANS.  
 OG PLASMID PNLL.

OC BACTERIA; PROTEOBACTERIA; ALPHA SUBDIVISION; ZYMMONAS GROUP;  
 OC SPHINGOMONAS.

RN SEQUENCE FROM N.A.  
 RC STRAIN-1199;

RA ROMINE F., STILLWELL L.C., WONG K.-K., THURSTON S.J., SISK E.C.,  
 RA SENSEN C.W., GAASPERLAND T., SAFFER J.D., FREDRICKSON J.K.;

RT "Complete sequence of a 184 kb catabolic plasmid from *Sphingomonas*  
 RT aeruginosa: kinship to coliphages and conservation of regulatory RNA  
 PT structures."  
 DR EMBL; AF079317; G3378295; -;

KW HYPOTHETICAL PROTEIN; PLASMID.  
 SQ SEQUENCE 379 AA; 42269 MW; ED0127FC CRC32;

Query Match 32.4%; Score 91; DB 2; Length 379;  
 Best Local Similarity 37.9%; Pred. No. 1.97e-02;

Matches 11; Conservative 9; Mismatches 8; Indels 1; Gaps 1;

QY 164 SREMAAEMAR-FLEWEATGPGGGATPLPG 191  
 :|: :|: |:|:|:|:|:|:|:|:|:|:  
 12 skqmeearvrliewlknggppsgappes 40

RESULT 13  
 ID Q22770 PRELIMINARY; PRT; 502 AA.

AC Q22770;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)

DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1999 (TREMBLREL. 09, LAST ANNOTATION UPDATE)

DE T25B9 .7 PROTEIN.  
 GN T25B9 .7.

OS CAENORHABDITIS ELEGANS.  
 OC EUKARYOTA; METAZOA; NEMATOZA; SECERNENTEA; RHABDITIDA;  
 OC RHABDITINA; RHABDITOIDEA; RHABDITIDAE; PELODERINAE; CAENORHABDITIS.

RN SEQUENCE FROM N.A.  
 RA MATTHEWS P.;

RA SUBMITTED (MAR-1996) TO EMBL/GENBANK/DDJB DATA BANKS.  
 RN [2]

SEQUENCE FROM N.A.  
 RP SEQUENCE 94150718.

RX WILSON R., AINSCOUGH R., ANDERSON K., BAYNES C., BERKS M., COOPER J., COULSON A.,  
 RA BONFIELD J., BURTON J., CONNELL M., COPSEY T., COOPER J., COULSON A.,  
 RA CRAXTON M., DEAR S., DU Z., DURBIN R., FAVELLO A., FULTON L., HILLIER L., JIER M., JOHNSON L.,  
 RA GARDNER A., GREEN P., HAWKINS T., HILLIER L., JIER M., JOHNSON L.,

RA JONES M., KERSHAW J., KIRSTEN J., LAISTER N., LATREILLE P.,  
 RA LIGHTNING J., LLOYD C., MCMURRAY A., MORTMORE B., O'CALLAGHAN M.,  
 RA PARSONS J., PERCY C., RIFKEN L., ROGRI A., SANDERS D., SHORENBEEN R.,  
 RA SMULDON N., SMITH A., SONHAMMER E., STADEN R., SUSTON J.,  
 RA THIERRY-MIEG J., THOMAS K., VAUDIN M., VAUGHAN K., WATERSTON R.,  
 RA \*2.2 Mb of contiguous nucleotide sequence from chromosome III of C. elegans.";  
 RT NATURE 368:32-38(1994).  
 RT DR EMBL; 270311; E1349578; -;  
 SQ SEQUENCE 502 AA; 56937 MW; 82D7FDD CRC32;

Query Match 30.6%; Score 86; DB 5; Length 502;  
 Best Local Similarity 26.5%; Pred. No. 1.22e-01;  
 Matches 9; Conservative 15; Mismatches 10; Indels 0; Gaps 0;

Db 406 GENAKMISKMANKEPEOSERFLWDYEYAAKNPG 439  
 QY 2 9egfitdsldskqmeearvrliewlkngppsg 35

RESULT 14  
 ID Q38064 PRELIMINARY; PRT; 552 AA.

AC Q38064;  
 DT 01-NOV-1996 (TREMBLREL. 01, CREATED)

DT 01-NOV-1996 (TREMBLREL. 01, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 03, LAST ANNOTATION UPDATE)

DE REPLICASE.  
 OS BACTERIOPHAGE PPT.

OC VIRUSES; SSRNA POSITIVE-STRAND VIRUSES, NO DNA STAGE; LEVIVIRIDAE;  
 OC LEVIVIRUS.

RN [1]  
 RP SEQUENCE FROM N.A.  
 RX MEDLINE: 95133199.

RA OLSTHOORN R.C.L., GARDE G., DAYHUFF T., ATKINS J.F., VAN DUN J.;  
 RA "Nucleotide sequence of a single-stranded RNA phage from *Pseudomonas aeruginosa*: kinship to coliphages and conservation of regulatory RNA structures."  
 RT VIROLOGY 205:611-625(1995).

RT DR EMBL; X80191; G51724; -;  
 SQ SEQUENCE 552 AA; 63300 MW; 35D6A16 CRC32;

Query Match 30.6%; Score 86; DB 9; Length 552;  
 Best Local Similarity 45.0%; Pred. No. 1.22e-01;  
 Matches 9; Conservative 9; Mismatches 0; Indels 2; Gaps 2;

Db 483 DISKRDLDE-VR-YVDWLRN 500  
 QY 10 dlskqmeearvrliewlkng 29

RESULT 15  
 ID Q67000 PRELIMINARY; PRT; 439 AA.

AC Q67000;  
 DT 01-AUG-1998 (TREMBLREL. 07, CREATED)

DT 01-AUG-1998 (TREMBLREL. 07, LAST SEQUENCE UPDATE)  
 DT 01-NOV-1998 (TREMBLREL. 08, LAST ANNOTATION UPDATE)

DE APOLIOPROTEIN N-ACYLTRANSFERASE.  
 GN INT.

OS AQUIFEX AEOLICUS.  
 RN [1]  
 RP SEQUENCE FROM N.A.

RX MEDLINE: 98196666.

RA DECKER T., WARREN P.V., GAASTERLAND T., YOUNG W.G., LENOX A.L.,  
 RA GRAHAM D.E., SNEAD M.A., KELLER M., AUJAY M., HUBER R.,

RA FELDMAN R.A., OVERBEEK R., OLSON G.J., SWANSON R.V.,  
 RT "The complete genome of the hyperthermophilic bacterium Aquifex aeolicus.";  
 RT NATURE 392:353-358(1998).

RN [2]  
 SQ SEQUENCE FROM N.A.

Tue Oct 5 09:37:48 1999

MOHAM-312-CLAIM83B.PEP.rspt

Page 5

RC STRAIN-VFS;  
RA DECKET G.; WARREN P.V., GAASTERLAND T., YOUNG W.G., LENOX A.L.,  
RA GRAHAM D.E., OVERBEK R., SNEAD M.A., KELLER M., AUJAY M., HUBER R.,  
RA FELDMAN R.A., SHORT J.M., OLSON G.J., SWANSON R.V.;  
RL SUBMITTED (JUL-1997) TO EMBL/GENBANK/DDBJ DATA BANKS.  
DR EMBL; AE000109; G2983374;  
KW TRANSFERASE; ACYLTRANSFERASE; LIPOPROTEIN.  
SQ SEQUENCE 439 AA; 50757 MW; 7963CD20 CRC32;

Query Match 29.2%; Score 82; DB 2; Length 439;  
Best Local Similarity 35.1%; Pred. No. 5.02e-01;  
Matches 13; Conservative 10; Mismatches 13; Indels 1; Gaps 1;  
Db 384 SEGTFQHMKLARVATENEKFPL-WVNNTGPSGIISP 419  
Qy :||||| :||:||:||:||:||:||:||:||:||:||:||:  
2 gegtfitsdiskqmeheeavriiewknggpssgapp 38

Search completed: Mon Oct 4 15:31:31 1999  
Job time : 12 secs.